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THE TYPHOID BACILLUS "CARRIER": A REVIEW.

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The article of which this review is a brief abstract is a report on the typhoid bacillus carrier, and is a review of the current knowledge on this subject. It is written by Dr. J. C. G. Ledingham, and occurs in the supplement to the thirty-ninth annual report of the local government board of England and Wales for the year 1909–10 containing the report of the medical officer. It consists of 15 chapters, in which the author reviews numerous reports by various writers and in which he reports some of his own observations. The subjects taken up are as follows: General facts regarding carriers, with reference to age, sex, frequency, etc.; pathogenesis of the carrier state; physical disabilities; intestinal carriers, treatment; urinary carriers, treatment; diagnostic methods employed; general questions of infectivity, statistical data; immunity, and various measures employed or suggested to diminish the spread of typhoid by carriers. Four chapters are devoted to accounts of instances of the infectivity of carriers. House and street cases, milk-borne cases, institutional cases, and army cases are taken up. A bibliography of 186 references is given at the end. For the purposes of this article a slightly different arrangement of subjects has been made, but in general the outline of the memoir has been followed.

INTRODUCTORY.

In the introductory chapter the author states that in the memoir he is "concerned solely with the typhoid bacillus and its recently recognized property of leading a saprophytic existence in an organism which may or may not react to its presence in any obvious fashion." He lays great stress on the important rôle played by the "carrier" and practically agrees with Frosch in his statement that if we can cure the typhoid bacillus carrier we can get rid of typhoid fever.

To Koch is given the credit of pointing out the necessity of supervision of typhoid cases, of typhoid convalescents, and of ambulant and abortive cases. It was upon Koch's recommendation that

bacteriological stations were established in southwest Germany for the study of typhoid fever, and since many of the reports from these stations have been used by the author in his memoir he gives a brief account of the organization of the German campaign.

The first experimental typhoid station of the German campaign was founded at Trier in 1903 under the directorship of Frosch. Later the number of stations was increased to 11, located at different places in southwest Germany. The typhoid stations are provincial establishments. Each laboratory has a director, two or three bacteriologists, and several attendants. The workers at each laboratory work in conjunction with the local authorities and have a fourfold duty, as follows:

1. To assist the local physicians in the diagnosis of typhoid fever.
2. To ascertain the source of infection in typhoid cases and render it innocuous, and to seek out infected persons.
3. To watch for unhygienic conditions and to make recommendations concerning them.
4. To make bacteriological examinations of stools and urine in order to determine when convalescents cease eliminating typhoid bacilli.

The workers at these laboratories have added and are still adding a great deal to our recent knowledge on the subject of typhoid fever and of the typhoid bacillus carrier.

GENERAL FACTS REGARDING CARRIERS.

1. *Elimination of typhoid bacilli during the course of the disease.*—Some statistics by different writers on this subject are given and, although the findings vary somewhat, they are all very significant.

(*a*) Drigalski followed 64 cases, with the following result:

Time.	Typhoid bacilli present in stools.	Percentage.
	Cases.	
First to fifth day of disease	10	15.6
Sixth to tenth day of disease	15	23.4
Eleventh to twentieth day of disease	21	33
Twenty-first to twenty-seventh day of disease	8	11.5
After 8 to 10 weeks	7	11
After 3 months and later	3	4.7

(*b*) Brion and Kayser examined 144 cases during the febrile period with the following result:

Time.	Cases examined.	Positive.
		Per cent.
First week of disease	22	32
Second week of disease	51	35
Third week of disease	71	45

(*c*) Bohne reports on a small series of 27 cases and finds the highest percentage during the fourth week:

Time.	Cases examined.	Positive.
		Per cent.
First week of disease	2	0
Second week of disease	13	23
Third week of disease	7	43
Fourth week of disease	4	100
Fifth week of disease	1	(1)

[1] 1 case.

(*d*) The most trustworthy results obtainable are probably those of Gaehtgens and Brückner, from a series of 72 cases, where the more recently introduced methods were used. Their findings follow:

Time.	Cases examined.	Positive.
		Per cent.
First week of disease	21	57
Second week of disease	32	53
Third week of disease	13	77
Fourth week of disease	4	50
Fifth week of disease	2	(2)

[2] 2 cases.

From the above findings it appears most likely that it is during the third week of the disease that the highest percentage of typhoid cases eliminate typhoid bacilli in the feces. Most observers agree that in about 25 per cent of typhoid cases typhoid bacilli can be demonstrated in the urine. This bacilluria usually occurs during the later stages of the disease, after defervescence or during late convalescence, although it may occur at the time of the eruption of the rose spots.

2. *Classification of carriers.*—In any clear discussion of the carrier some sort of classification is evidently necessary, since much confusion exists in the literature for want of a uniform classification for carriers. Several classifications are given which must necessarily be more or less artificial and not applicable to every case, because it is not possible to obtain in each case the data necessary for classifying it.

(*a*) Conradi has adopted the following classification:

First group.—Primary carriers: Those carriers in whom the infection has not led to symptoms, including persons in the incubation stage of the disease.

Second group.—Secondary carriers: Convalescents from typhoid fever who continue to eliminate bacilli for a period longer than 10 weeks after the onset of the attack.

Third group.—Tertiary carriers: Those carriers who continuously eliminate bacilli after the primary attack.

(*b*) Sacquepée has recently suggested a more intelligible and comprehensive classification.

Group 1.—Precocious carriers: Those carriers in the incubation stage of the disease.

Group 2.—Persons who have recovered from typhoid fever, but who continue to eliminate typhoid bacilli.

Subgroup A.—Convalescent carriers: Those who cease eliminating bacilli before the end of the third month.

Subgroup B.—Chronic carriers: Those who eliminate bacilli for an indefinite period.

Group 3.—Paradoxical carriers: Those who have never had symptoms of typhoid fever, but who eliminate bacilli for an indefinite period.

(*c*) For ordinary purposes, however, typhoid bacillus carriers may be classed into two great groups, "temporary" or "transitory" and "chronic" carriers. The terms "temporary" or "transitory" carriers (*bazillenträger* of the German writers) are applied to convalescents who cease eliminating typhoid bacilli before the end of the third month after the onset of the disease, while the term "chronic" carriers (*dauerträger* of the German writers) is applied to carriers who eliminate bacilli for an indefinite period.

3. *Frequency of carriers.*—Reports by various writers are considered by the author to give an idea as to the frequency of carriers. Great variation in results is found, which may be due to a number of factors, such as too few examinations in view of the prolonged periods of intermission of bacilli elimination, or to our bacteriological methods, which at best fall far short of being perfect in their application to the carrier problem.

Brief extracts from some of the reports are presented here:

(*a*) Lentz examined 400 convalescents and found 4.5 per cent carriers, 1.5 per cent temporary and 3 per cent chronic.

(*b*) Conradi examined 400 convalescents and found 6 per cent carriers, 5.5 per cent secondary (temporary) and 0.5 per cent tertiary (chronic).

(*c*) Klinger followed 482 cases of typhoid fever and found that 11.4 per cent eliminated bacilli during convalescence, but not longer than six weeks after defervescence, and 1.7 per cent longer than six weeks.

(*d*) Klinger, in another series of 604 convalescents, found 11.6 per cent temporary intestinal carriers, 1.7 per cent temporary urinary carriers, and 1 per cent chronic carriers. He states that all the urinary carriers were cured by urotropin.

(*e*) Kayser, in conjunction with Brion, obtained a carrier percentage of 1.5 in a series of 200 convalescents. In another series of 101 persons, who had previously been discharged as typhoid-free, he made examinations one year after their attack of typhoid fever and obtained a carrier percentage of 3. This shows the great importance of late control examinations.

(*f*) Brückner examined 316 persons who had had typhoid fever in previous years and found 3.8 per cent carriers; but, if only adults were considered, 5.2 per cent.

(*g*) Probably the most thorough work on this phase of the subject is that by Semple and Grieg, working in India. In their work, 86 typhoid convalescents were followed and bacteriological examinations of the excreta were made daily until the case could be classified. They found that of the 86 convalescents 11.6 per cent eliminated bacilli for a period longer than six weeks after defervescence, i. e., chronic carriers. This is undoubtedly the highest carrier percentage recorded and is probably due to the elaborate routine and thoroughness of the work.

(*h*) Aldridge, also in India, examined 190 typhoid convalescents in the army and found 3.1 per cent were eliminating typhoid bacilli longer than six months after defervescence.

(*i*) Tsuzuki examined 51 typhoid convalescents in the Japanese army and found that 5.8 per cent were eliminating typhoid bacilli beyond the three-month limit.

(*j*) From the statistics from the whole German campaign, in one series of 3,867 typhoid cases, a carrier percentage of 1 was obtained; in another series of 6,708 cases a chronic carrier percentage of 2.47 and a temporary carrier percentage of 2.15 were obtained. Several reports are given of attempts to obtain the carrier percentage among the general population where healthy persons only were examined.

(*k*) Klinger reports on the examination of the excreta of 1,700 persons living in the neighborhood of actual cases, where a carrier percentage of 0.88 was obtained.

(*l*) Rosenau, Lumsden, and Kastle report on the examination of 1,014 specimens of feces and 26 specimens of urine of persons living in Washington, D. C., where a carrier percentage of 0.3 was obtained; that is, 3 per 1,000.

(*m*) Minelli examined 250 persons in an institution situated in a town free of typhoid fever and obtained a carrier percentage of 0.5.

4. *Facts regarding age, sex, etc.*—(*a*) In 1909 Prigge reported on the examinations made at Saarbrücken during the three years previous. There were examined 10,481 persons and 84 carriers discovered, making a carrier percentage of 0.77. He took one year as the limit between the temporary and the chronic carriers, and classified them as follows:

A. Temporary carriers:

α. In the incubation stage, 3 persons.

β. Clinically cured, but eliminating bacilli from 10 weeks to 1 year, 25 persons—9 men and 16 women.

γ. Healthy persons, 24—16 men and 8 women.

B. Chronic carriers:

δ. Persons giving a typhoid history, 27.

ε. Persons giving no typhoid history, 8—all women.

In another series of 102 carriers, Prigge found 17 males and 85 females, a ratio of 1 to 5.

(*b*.) Many interesting points are found in the carrier statistics of the whole campaign conducted in southwest Germany from its commencement to the end of 1907. These have been fully worked up and commented upon by Klinger. Notification of 431 carriers had been made. The period of three months was taken as the upper limit for the transitory carrier. Of the 431 carriers, 220 were chronic and 211 were transitory. Of the chronic carriers, 80 per cent gave a history of an attack of typhoid fever, while of the transitory carriers only 43.6 per cent gave such a history. The ratio of females to males among the chronic carriers was 5 to 1, while among the transitory carriers it was only 1.4 to 1. The majority of the chronic carriers was among persons in middle age, the greatest number per five-year age group occurring in the group 40 to 45 years. The majority of the transitory carriers was among young persons, the greatest number occurring in the age group 5 to 10 years. These facts are shown in the memoir by means of a table and a chart, which are not reproduced here.

A definite diagnosis of gallstone disease was made in 13.6 per cent of the chronic cases. Of the chronic cases, 30 had their attack of typhoid fever from 4 to 30 years previously. In 42 of the chronic carriers a spontaneous cessation in the discharge of typhoid bacilli was noted, but these bacteriological cures should be regarded with great skepticism in view of the prolonged periods of intermission which have been found to occur in carriers.

(*c*) Frosch, in considering 6,708 cases of typhoid fever, found that 310 became carriers, 144 transitory, and 166 chronic. Females formed 80 per cent of the chronic carriers and 60 per cent of the transitory carriers. Children under 15 years of age formed only 4 per cent of the chronic carriers, but 35 per cent of the transitory carriers.

5. *Infant carriers.*—It is known that children form a small percentage of the chronic carriers, but their importance as transitory carriers has been repeatedly demonstrated. One interesting and instructive case is taken from a report by Rommeler, which at once illustrates the importance and danger of the carrier in the persons of young children.

The case cited is that of an 18-months-old suckling child, whose mother was taken ill with typhoid fever. The child was nursed by its mother for eight days after the onset of her illness and was then taken charge of by a neighbor. On the first day of her custody the foster mother noticed that the child had a slight diarrhea, which she attributed to the necessary weaning. Seventeen days later the foster mother developed typhoid fever. Within the next two months five other members of the household developed typhoid fever, one of whom died. Six weeks after the slight diarrhea of the child its stools were positive for typhoid bacilli on two different occasions, but negative on nine subsequent examinations. Its serum gave a positive Widal in a dilution of 1 in 100.

6. *"Precocious" carriers and early contact cases.*—The presence of typhoid bacilli in stools during the incubation stage has been demonstrated by a number of observers. G. Mayer, in 1903, found typhoid bacilli in the stools of a boy who did not develop symptoms until eight days later. Other cases have been reported by Conradi and Klinger. Tables are given in the memoir taken from a report by Conradi which show the high degree of infectivity of persons in the first weeks of the disease. Another table, compiled by Klinger, shows the same and in addition the infectivity of persons in the incubation period of the disease. It is unfortunate that the period of highest infectivity should occur at the stage of the disease when few or no precautions are being taken.

(*a*) A summary of Conradi's tables is given here, which shows his findings in 85 cases of secondary infection, where the primary case was known and where the time of exposure was pretty definitely determined.

	Time.	Number of cases.
Secondary cases infected by primary case	First week of disease	49
Do	Second week of disease	16
Do	Third week of disease	10
Do	Fourth week of disease	5
Do	Fifth week of disease	3
Do	Sixth week of disease	1
Do	Seventh week of disease	1

From this table it is seen that about 58 per cent of these contact cases took place during the first week of the disease, but Conradi thinks that some of these may have become infected during the incubation period of the primary case.

(*b*) Klinger's table is based on 812 contact infections, and shows what an important source of infection an early typhoid case is. In 60 of these cases the incubation period was pretty definitely determined and found to vary from 5 to 45 days, with an average of 16 days. In his table the incubation period is taken as two weeks.

	Time.	Number of cases.
Secondary cases infected by primary case	First week of incubation period	33
Do	Second week of incubation period	150
Do	First week of disease	187
Do	Second week of disease	158
Do	Third week of disease	116
Do	Fourth week of disease	59
Do	Fifth week of disease	34
Do	Sixth week of disease	22
Do	Seventh week of disease	14
Do	Eighth week of disease	16
Do	Ninth week of disease	15
Do	Tenth week of disease	8

This table shows that a typhoid case is most dangerous for others during the incubation period and during the first few weeks of the disease. The precautions which are usually taken, and also the decrease in the elimination of bacilli during the later weeks, evidently serve to keep down the number of secondary infections during this period.

INTESTINAL CARRIERS.

1. *Pathogenesis of the carrier state:* (*a*) Many years before the recognition of the typhoid bacillus carrier it was known that typhoid bacilli could be isolated from the bile and from the upper portions of the intestinal tract of persons dead of typhoid fever. It was also known that typhoid baccilli could be isolated from the contents of the gall bladder and from the interior of gall stones of some cases coming to operation for cholelithiasis. One such case was reported by Droba in 1899, where there was a history of typhoid fever 17 years before, and another one by Cushing, in 1898, where no history of typhoid fever was obtained. Short accounts of reports of similar cases are given, but in a few of them only is there any note on the bacteriological examination of the stools and urine. In these few cases the number of stool examinations was limited and no conclusions were drawn regarding the elimination of typhoid bacilli. Since the recognition of the carrier, bacteriological examinations of stools and urine have been made more frequently and with greater care.

(*b*) *Relation of the carrier to the gall bladder.*—It is known that many carriers suffer from gall stones, and that many others show a condition of cholelithiasis at operation or at autopsy, even though they may not have had symptoms pointing to this condition. In 1892 Naunyn noted the frequency of gall stones in persons with a typhoid fever history, but Forster, in 1908, first directed attention to the association of gall-bladder troubles with typhoid carriers. A number of cases are cited by the author, which show the important relation of the gall bladder to the carrier state.

The percentage of carriers who have symptoms referable to the gall bladder is much higher among chronic than among transitory carriers. Of 220 chronic carriers reported by Klinger 13.6 per cent allowed a definite diagnosis of gall stones to be made. This corresponds closely to the 10 per cent of gall-stone cases of all origin that present diagnostic symptoms. Forster reports that in a series of 173 chronic carriers who were eliminating typhoid bacilli from 1 to 30 years after their primary attack, the ratio of females to males was 5 to 1. This corresponds closely to the ratio of gall-stone incidence in the female to that in the male, which is about 3 to 1.

(*c*) The relation of the typhoid bacillus to gall stones of chronic carriers has given rise to much discussion. The question at issue is whether the bacilli favor stone formation by merely forming a nucleus or otherwise, or whether the bacilli enter the preformed stone. Bachmeister thinks that recently formed stones are generally sterile and that only old stones contain bacilli, while Cushing thinks that only recently formed stones contain bacilli. Reports of experiments are given where *B. coli* and *B. typhosus* have been recovered from the center of cholesterin gall stones after the stones had been allowed to remain in broth cultures of these organisms. Similar results were not obtained with other kinds of stones. The author aptly notes that nothing is given of the histories of the persons furnishing the stones for these experiments.

Experimental results seem to leave no doubt that the typhoid bacillus may play some part in the formation of gallstones, but at the present time nothing definite can be said concerning its relative importance in this process.

(*d*) The relation of the typhoid bacillus to the gall bladder has been made more clear by animal experimentation and by microscopic examination of the walls of the gall bladder of infected persons. It has been found that after intravenous injections of typhoid bacilli into rabbits the gall bladder may harbor the organism for 109 days. In some cases the bacilli may be recovered from the gall bladder wall two hours after an intravenous injection. The observation has been made in these experiments that the bile may remain sterile and yet typhoid bacilli may be recovered from the mucosa of the gall bladder.

Doerr performed the following experiments: He demonstrated the presence of bacilli in the bile eight hours after an intravenous injection. In another animal he ligated the hepatic duct before injection and found that the bile [in the gall bladder?] remained sterile. He found also that when the cystic duct was ligated before injection, the bile remained sterile also. From these findings Doerr concluded that the bacilli came to the gall bladder by the bile route and not by its blood vessels. J. Koch has questioned Doerr's results, for in histological sections of the walls of the gall bladder of a person dead of typhoid fever he demonstrated small nests of typhoid bacilli in the mucosa of the gall bladder and found that these nests bore a close relationship to the small capillaries in the papillæ of the submucosa. On account of these findings Koch suggests that typhoid bacilli reach the gall bladder by means of the blood vessels in its walls. Other workers also have questioned Doerr's results, so it is by no means definitely determined in what way typhoid bacilli reach the gall bladder.

(*e*) Many theories have been advanced to explain the carrier state. Forster reports a case of a man becoming a carrier after an attack of typhoid fever which came on two years after an operation for appendicitis. Forster suggests that in this case the altered circulatory conditions may have predisposed to the carrier state. Portal stasis, caused by tight corsets, frequent pregnancies, etc., has been advanced as an explanation of the preponderance of gallstones in the female and consequently may have some bearing on bringing about the carrier state in females. Lentz suggests that circulatory disturbances due to pregnancies and to overexertion in household work may be a factor. Prigge thinks that menstrual and puerperal blood losses should be considered. Fornet holds the view that the carrier state is due to an established immunity to the typhoid bacillus where the primary attack has brought about such a tolerance for the bacillus as to render possible its saprophytic existence in the body of the carrier. He thinks that a person becomes a carrier only after a second symptomless infection by an organism which may or may not be descended from the one causing the primary infection. He has compiled statistics to support this view.

2. *Treatment of intestinal carriers.*—The treatment of typhoid bacillus carriers has been far from satisfactory. Up to the present time no sure method has been found for rendering the carrier typhoid free. "Spontaneous" cures have been reported, but these results have to be accepted with great caution in view of the prolonged period of intermission of bacilli elimination in some carriers and on account of the fact that bacteriological methods fall far short of perfection at the present time. Minimal quantities of typhoid bacilli in a stool may easily escape detection when only a small proportion of it is used in an examination.

Many drugs have been tried and found wanting. Salol, beta-naphthol, calomel, bile and its salts, turpentine oil, sodium bicarbonate, chloroform, and other drugs have only a temporary effect in decreasing the elimination of typhoid bacilli in the stools. One "cure" is claimed for sodium salicylate, where 3 to 5 grams were given daily at intervals for over a year. Lactic acid bacilli have been given with questionable results.

The surgical measures for the cure of carriers have been directed chiefly toward the gall bladder as the main seat of vegetation of the bacilli. The author reviews a number of reported cases in which the gall bladder was either drained or removed. In general the results obtained were by no means encouraging. When it is recalled that at autopsy of carriers typhoid bacilli have been recovered from the liver, walls of the gall bladder, from the large bile ducts, mesenteric glands, and other organs, the difficulty of the situation is at once apparent.

Typhoid vaccines and exposure of the gall bladder region to the X-ray have been tried, but promise little. G. Mayer has recommended an exclusive milk diet during the course of the disease and during convalescence as being less favorable to carrier production than is a mixed diet. The use of salicylates is the only means recommended by the author for arresting or diminishing the invasion of the bile tracts by typhoid bacilli during the course of the disease.

URINARY CARRIERS.

1. *Occurrence.*—The urinary carrier is not so frequently discovered as is the intestinal carrier. The great majority of chronic carriers discovered have eliminated bacilli in the feces only. In many of the female urinary carriers reported, the urine was probably contaminated with feces, for in the few cases where catherized specimens have been examined the urine has been found to be constantly negative. The author has never found the urine positive for typhoid bacilli in a male chronic carrier. It is not uncommon to find both the urine and the feces positive in transitory and in early convalescent carriers. Schneller reports transitory carriers with urine positive and feces negative, some with feces positive and urine negative, and others with both urine and feces positive. A number of other reports are reviewed which show that the true urinary carrier is an important factor in the carrier problem and should not be overlooked.

2. *Pathology.*—The pathology of the urinary carrier is by no means complete. Nephro-typhoid may be associated with fecal abscesses of the kidney, which may have a bearing. It is known that an inflamed or cystic renal pelvis is the main depot of the typhoid bacillus in urinary carriers, and this condition may or may not be associated with an inflamed bladder, which may act as a secondary depot. Existing inflammation of the urinary tract may predispose to the carrier state by serving as a favorable site for the lodging and vegetation of the bacilli, whence they may be discharged into the urine. Reports of cases are given which seem to substantiate these statements.

3. *Treatment of the urinary carrier.*—Urotropin has not proved so efficacious in the treatment of the bacilluria of carriers as in the treatment of the bacilluria of convalescence. The best that can be said for it is, that it does decrease the number of bacilli eliminated during its administration, but that they reappear in full force when the drug is suspended. Semple and Greig found urotropin of little or no service in their series. In a case reported by Niepratschk this drug was given a thorough trial with no permanent reduction of bacilli eliminated. Borovertin (hexamethylene tetramine triborate) was then tried in the same case with apparent success. Six grams were given daily for a month and seemed to have a remarkable disinfectant action on the urine. Niepratschk considered this case a "cure." One other "cure" with borovertin has been reported. The author thinks that borovertin should receive a thorough trial in the treatment of urinary carriers and should be given after a preliminary course of urotropin.

Treatment with vaccines from the homologous strain has met with some measure of success, especially when the urine has been made alkaline by the administration of sodium salicylate.

PHYSICAL DISABILITIES OF THE CARRIER STATE.

1. Aside from the gall-bladder symptoms, carriers are but little inconvenienced by the presence of typhoid bacilli in their bodies. Occasionally headaches are complained of, chiefly by the urinary carriers. G. Mayer has noted periodic intestinal disturbances in carriers, as in the early spring, midsummer, or late autumn. Carriers

of a nervous temperament may develop a form of neurosis on account of the knowledge of their condition, of which they are constantly reminded by the necessary precautions of disinfection which they have to take.

2. Several reports of fatal cases of autoinfection are reviewed where carriers apparently succumbed to a general infection by their own bacillus. Some of the cases were verified bacteriologically. Cases of autoinfection are usually fatal.

INSTANCES OF INFECTIVITY OF CARRIERS.

The author of the article reviews a great number of instances which have been reported in the literature by individual observers and by the workers in the campaign in southwest Germany. The cases are classified as house and street cases, milk-borne cases, institutional cases, and army cases, and a chapter is devoted to each class. Only a few of these cases can be reviewed here.

1. A case of a carrier in the person of a baker's wife has been reported by Kayser and is of interest. In May, 1904, an apprentice baker living with his master contracted typhoid fever and died. It was learned that the baker's wife had had typhoid fever some years before and also that practically every apprentice baker had become afflicted with some gastrointestinal disturbance soon after his term of service with this baker began. The wife said these symptoms were caused by "too good diet." The stools of the woman were examined and she was found to be a carrier. She was intractable and took no precautions. In the following August her tenant took sick and died of typhoid fever, and later one other case was attributed to her—three cases in all.

Kayser reports another instance where 4 cases were attributed to a female carrier who had had typhoid fever 40 years before.

An interesting case reported by Mayer is that of a manager of an estate who was found to be a carrier. The manager had suffered from typhoid fever 10 years before, and during these 10 years there had been 16 cases of typhoid fever on or near the estate. It was practically certain that the manager had been the source of these infections.

The well-known New York case, which has been reported by Soper, is of considerable interest. In this case the carrier was a cook, who infected 26 persons in 7 different families.

Many other instances of carriers are reviewed which can not be given here, but attention is called to the fact that many of them were "Hausfrauen," or persons who handled food; cooks, boarding-house keepers, etc. The statistics of Frosch show the importance of this class of carriers, for among 454 female carriers reported by him there were 314 "Hausfrauen" and 56 domestic servants.

The milk-borne cases which are cited were traced, in practically every instance, to a carrier employed in the preparation or distribution of the milk. A number of milk epidemics are reviewed.

In the consideration of one milk-borne epidemic Scheller thought that he had proved the existence of a type of carrier in whom the typhoid bacillus existed as a true saprophyte. He called this type the "typhusbazillenzwischenträger" or intermediate carrier. A high incidence of typhoid fever had existed among persons employed at a particular dairy and among those who consumed the milk from

it. Fourteen persons who either worked in the dairy or consumed milk from it were found to be eliminating typhoid bacilli in the stools or in the urine. One of these, a female employee at the dairy, gave a history of an attack of typhoid 17 years before; the 13 others had never had typhoid fever and were healthy at the time. The following test was made: The female carrier was discharged from her dairy work and all were required to wash their hands with lysol before milking. The urinary carriers were given urotropin. At the end of a month the excreta of the 13 was examined and found to be free of typhoid bacilli, but the female carrier with the typhoid history was still eliminating bacilli. Scheller concludes that this woman was the true carrier and that the others were only temporary or intermediate carriers.

Lentz holds the view that carriers such as these are persons who have had slight or unnoticeable symptoms of typhoid fever or are what he calls "symptomless" typhoid fever cases, as he has found the agglutination reaction positive in such cases with the same serum dilutions as in clinically typical typhoid fever cases. Scheller, however, found in some of his cases that the agglutination reaction was negative, while in others the titre was 1 in 2,000.

The author gives a number of instances of the discovery of carriers in institutions and in bodies of troops which have been reported in the literature. They are all accounts of the discovery of carriers after some high incidence of typhoid fever, and will not be given here.

DIAGNOSTIC METHODS EMPLOYED IN SEARCHING FOR CARRIERS.

1. *The Widal reaction.*—In searching for carriers, in an institution for instance, a preliminary Widal test made on suspected persons may give line on a carrier. Although the Widal can not be entirely relied upon, Kayser states that 75 per cent of carriers give a marked Widal. Ledingham thinks this percentage too high, if 1 in 100 be taken as the lowest dilution for a positive result. Kamm found that four samples of blood from an asylum gave positive Widals, but he was unable to find the typhoid bacillus in the excreta of any one of the four persons who gave a positive Widal. Eccard has found that, in some persons who give no Widal or a positive one with low dilutions, the titre may suddenly jump to 1 in 100 with the appearance of symptoms of a gastrointestinal disturbance. After the attack the titre falls.

2. *Bacteriological methods.*—When carriers are being sought for and when facilities are at hand the best method of procedure is to make systematic bacteriological examinations of the excreta, beginning with persons who give a typhoid fever history or who present symptoms of gall bladder troubles. Widal tests should be applied at the same time and special attention given to persons showing a positive Widal reaction.

The method of isolating the typhoid bacillus is outlined briefly. Make a broth emulsion of two or three large loopfuls of feces and allow to sediment for an hour. Two or three small loopfuls of the emulsion are spread with a bent glass rod over the surface of the medium, which has been previously poured into Petri dishes and allowed to harden. The medium should be quite dry. After 24 hours the colorless suspicious typhoid colonies are fished and

inoculated into mannite-peptone-water. The typhoid bacillus produces acid but no gas in this medium, as also does the Flexner type of the dysentery bacillus. The typhoid bacillus can now be identified by the application of fermentation and agglutination tests.

The author gives a list of different media in current use for the isolation of the typhoid bacillus and suggests that better results can be obtained by learning thoroughly the use of one medium than by changing from one to another. These different media will be merely mentioned here:

1. Bile-salt-neutral-red-agar (MacConkey, Grünbaum and Hume).
2. Lactose-litmus-nutrose-kristalviolet-agar (Drigalski and Conradi).
3. Lactose-fuchsin-sodium-sulphite-agar (Endo).
4. Preliminary enrichment by caffein before plating on Drigalski-Conradi medium.
5. Media containing malachite-green:

(*a*) Malachite-green-nutrose-agar (Loeffler).
(*b*) Malachite-green-bile-agar (Loeffler).
(*c*) Malachite-green-sodium-sulphite-bile-agar (Padlewski).
(*d*) Malachite-green-safranin-reinblau media (Loeffler and others).
(*e*) Preliminary enrichment on malachite-green media and later plating on Drigalski-Conradi or Endo media (Lentz and Tietz).

The author gives a number of comparative results of workers who used the above media, which show great variation. The method of Lentz and Tietz seems to have yielded the best results in the hands of recent observers.

GENERAL QUESTIONS OF CARRIER INFECTIVITY—STATISTICAL DATA.

The transference of the typhoid bacillus from a carrier to a new host depends upon the rate of elimination of bacilli, upon the personal hygiene of the carrier, and upon numerous other factors. A successful infection of the new host depends upon the magnitude of the dose received, upon the degree of virulence of the organism, and upon the susceptibility of the new host. The size of the dose of typhoid bacilli received by the new host is probably the most important factor in determining whether a successful infection will result or not. As to the virulence of the strains isolated from carriers, the same variations are found to exist as in strains isolated from acute cases of typhoid fever. No marked difference in degree of virulence for guinea pigs has been found to exist between carrier strains and strains isolated from acute cases.

The observations by Ledingham on guinea pigs show that the virulence of the strain of a typhoid bacillus in the same carrier may vary. He suggests that the virulence may be reduced during the winter months. Scheller thinks that an avirulent strain may suddenly regain its virulence.

The susceptibility of the new host is a factor which does not lend itself to experimentation, and our knowledge of it must be obtained from observations of actual cases. The report of Scheller's "typhusbazillenzwischenträger" seems to show that the typhoid bacillus can exist as a saprophyte in the human body. Such instances, as has been said, may be cases of "symptomless" typhoid fever. Cases are reported which seem to indicate that trauma, pregnancy, etc., may predispose to infection. Conradi calls attention to the fact that strangers who come within the radius of infection of a carrier are more liable to infection than others, apparently on account of a lack of immunity.

Davies and Walker-Hall think that only at certain seasons are secondary infections liable to result from a carrier, and that every carrier has a peculiar season of his own when he is most likely to cause secondary infections.

Statistical data.—Regarding the relative number of cases of typhoid fever which are due to carriers, Kayser, in an analysis of 505 cases, found that 9.5 per cent were due to carriers. Of 28 carriers discovered, 11 were known to have caused secondary infections in their neighborhood. Foster found that 20 per cent of his 386 cases were attributable to carriers. Frosch found that 4.11 per cent of 6,708 cases of typhoid fever were due to carriers, and in another series of contact infections he found that about one-fourteenth were due to carriers. Klinger found that 431 carriers had given rise to 351 cases of typhoid fever, 50 due to transitory, and 300 due to chronic carriers

In considering these results it must be borne in mind that the carrier has received credit only for those cases infected by him directly, and it must be remembered that the importance of the carrier as a source of infection increases when those cases are considered which received their infection from his victims. The line of infections may be considered as a chain, the first link of which is the carrier himself.

IMMUNITY QUESTIONS IN CARRIERS.

The author states that from two-thirds to three-fourths of all chronic carriers give a positive Widal titre at least 1 in 50. Some have shown a titre of 1 in 2,000. No definite statement regarding the Widal in transitory carriers can yet be made, but agglutinins have been demonstrated in the serum of persons who discharged typhoid bacilli for only a short while. It has been noted that the serum of a carrier may agglutinate the laboratory strain and not the homologous strain at all or may give only a late reaction with the homologous strain. In some cases vaccination raises the titre of the serum, in others not.

The few observations made on the bacteriocidal properties of the sera of carriers show little or no variation from the normal. Ledingham and also Gaehtgens have found a marked increase in the opsonin content of carrier sera. Hamilton recommends this procedure as a preliminary test in searching for carriers. Several observers have demonstrated the presence of complement-deviating substances in the sera of carriers who gave negative Widals.

METHODS TO DIMINISH THE SPREAD OF INFECTION BY CARRIERS.

A routine bacteriological examination of the excreta of convalescents should be made in order to determine the time when they ceased discharging typhoid bacilli. When a carrier is discovered, suitable treatment should be instituted in the way of diet and otherwise, in order to encourage the elimination of all the typhoid bacilli and if possible to avoid the chronic stage. Otto Mayer has suggested the foundation of a convalescent home for recovered typhoid cases, where examinations could be made and carriers discovered.

In asylums and other institutions isolation is the simplest procedure. All carriers should be under supervision, and should not be allowed to engage in any work necessitating them to handle or to

prepare food. All carriers should have individual articles which they use in their everyday life, such as dishes, basins, towels, etc. Toilets used by carriers should receive regular and systematic disinfection and carriers should be required to disinfect their hands after each visit to the toilet. Thorough washing with soap and water suffices in carriers of some occupations, but if there is a possibility of the carrier handling foodstuffs an antiseptic solution should be used in addition. Gaehtgens finds alcohol in the form of eau de cologne or spirits of wine the most satisfactory disinfectant.

The typhoid station at Strassburg, one of the stations in southwest Germany, issues a pamphlet which explains the carrier state and the danger of a carrier to the community, and gives full directions for carriers. Davies and Walker-Hall have issued a pamphlet of instruction to typhoid convalescents in which is explained the necessity for cleanliness and for strict personal hygiene. General hygienic measures are of great importance, in view of the lack of any sure method of preventing or of doing away with the carrier state.

CONCLUSION.

Dr. Ledingham has brought together in his interesting and instructive article a great mass of material, and has presented many facts not generally known concerning typhoid fever and concerning the typhoid bacillus carrier. The article is rather long and contains so many individual reports and statistics that many details have been omitted in this review.

The writer of this abstract wishes to state that for clearness and exactness he has used, in many places, the exact words and phrases used in the article itself. Anyone wishing more detailed information on the subject of the typhoid bacillus carrier is referred to Dr. Ledingham's report, where a rather full bibliography may be found.

UNITED STATES.

REPORTS TO THE SURGEON GENERAL, PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

PLAGUE-PREVENTION WORK.

DISTRIBUTION OF POISON.

In connection with the making of a squirrel-free zone around the cities in California on San Francisco Bay, 190 acres of land in Alameda County were covered with poison during the week ended February 25, 1911.

Record of Plague Infection.

Places.	Date of last case of human plague.	Date of last case of rat plague.	Date of last case of squirrel plague.	Total number of rodents found infected since May, 1907.
California:				
Cities—				
San Francisco	Jan. 30, 1908	Oct. 23, 1908	None	398 rats.
Oakland	Oct. 26, 1909	Dec. 1, 1908	do	126 rats.
Berkeley	Aug. 28, 1907	None recorded	do	None.
Los Angeles	Aug. 11, 1908	None	Aug. 21, 1908	1 squirrel.
Counties—				
Alameda (exclusive of the city of Oakland)	Sept. 26, 1909	Wood rat, Oct. 17, 1909.	Feb. 1, 1911	94 squirrels. 1 wood rat.
Contra Costa	July 21, 1908	None	Sept. 10, 1910	247 squirrels.
Merced	None recorded	do	June 6, 1910	2 squirrels.
Monterey	do	do	do	4 squirrels.
San Benito	June 5, 1910	do	July 11, 1910	20 squirrels.
San Joaquin	None recorded	do	Jan. 9, 1911	11 squirrels.
San Luis Obispo	do	do	Jan. 29, 1910	1 squirrel.
Santa Clara	Aug. 23, 1910	do	Oct. 5, 1910	23 squirrels.
Santa Cruz	None recorded	do	May 17, 1910	3 squirrels.
Stanislaus	do	do	May 21, 1910	5 squirrels.
Washington:				
Seattle	Oct. 30, 1907	Feb. 8, 1910	None	22 rats.

Rats Collected and Examined for Plague Infection.

Places.	Week ended—	Found dead.	Total collected.	Examined.	Found infected.
California:					
Cities—					
Berkeley	Feb. 25	.....	[1] 74	48	.....
Oakland	do	44	[2] 482	367	.....
San Francisco	do	30	[3] 1,346	901	.....
County—					
San Joaquin	do	.....	[4] 2	2	.....
Total		74	1,904	1,318	.....

[1] Identified, *Mus norvegicus* 48, *Mus musculus* 26.
[2] Identified, *Mus norvegicus* 409, *Mus rattus* 2, *Mus musculus* 71.
[3] Identified, *Mus norvegicus* 721, *Mus rattus* 131, *Mus musculus* 345, *Mus alexandrinus* 149.
[4] Identified, *Mus norvegicus* 2.

Squirrels Collected and Examined for Plague Infection.

Places.	Week ended—	Trapped and shot.	Found dead.	Examined.	Found infected.
California:					
Counties—					
Alameda	Feb. 25	295	1	296	.....
Fresno	...do....	116	.....	114	.....
Kern	...do....	13	2	15	.....
Imperial	...do....	94	.....	91	.....
Los Angeles	...do....	442	.....	437	.....
Madera	...do....	270	.....	265	.....
Mariposa	...do....	141	.....	141	.....
Merced	...do....	7	.....	7	.....
Monterey	...do....	926	.....	901	.....
San Diego	...do....	17	.....	17	.....
San Joaquin	...do....	384	22	401	.....
San Luis Obispo	...do....	419	44	460	.....
Santa Clara	...do....	252	.....	248	.....
Stanislaus	...do....	297	.....	294	.....
Yolo	...do....	11	.....	11	.....
Total	.....	3,684	69	3,608	.....

Other Animals Collected and Examined.

Place.	Week ended—	Animals collected.	Examined.	Found infected.
California:				
Counties—				
Alameda	Feb. 25	2 rabbits, 1 gopher.	3	.....
Fresno	...do.....	3 rabbits	3	.....
Imperial	...do.....	67 rabbits	67	.....
Los Angeles	...do.....	1 gopher, 1 weasel.	2	.....
Madera	...do.....	18 rabbits	18	.....
Mariposa	...do.....	8 rabbits	8	.....
Monterey	...do.....	2 rabbits	2	.....
San Joaquin	...do.....	18 rabbits, 1 gopher.	19	.....
San Luis Obispo	...do.....	6 rabbits	6	.....
Santa Clara	...do.....	1 rabbit, 36 gophers.	37	.....
Yolo	...do.....	24 rabbits	24	.....
Total	.....	.....	189	.....

SMALLPOX IN THE UNITED STATES.

In the following tables the States indicated by an asterisk are those from which reports of smallpox are received only from certain city and, in some cases, county boards of health. In these States, therefore, the recorded cases and deaths should not be taken as showing the general prevalence of the disease. In the States not marked by an asterisk the reports are received monthly from the State boards of health and include all cases reported throughout the State.

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received During Week Ended March 17, 1911.

Place.	Date.	Cases.	Deaths.	Remarks
*Alabama:				
Montgomery	Feb. 26–Mar. 4	3		
Connecticut	Feb. 1–28			No cases.
Florida:				
Counties—				
Duval	Feb. 26–Mar. 4	9		
Hillsboro	Feb. 26–Mar. 4	3		
Jackson	Feb. 26–Mar. 4	4		
Leon	Feb. 26–Mar. 4	10		
Lee	Feb. 26–Mar. 4	7		
Liberty	Feb. 26–Mar. 4	6		
Polk	Feb. 26–Mar. 4	23		
Putnam	Feb. 26–Mar. 4	3		
Volusia	Feb. 26–Mar. 4	2		
Total for State		67		
Iowa:				
Counties—				
Benton	Feb. 1–28	1		
Black Hawk	Feb. 1–28	1		
Boone	Feb. 1–28	1		
Dallas	Feb. 1–28	1		
Dubuque	Feb. 1–28	1		
Fremont	Feb. 1–28	7		
Guthrie	Feb. 1–28	2		
Linn	Feb. 1–28	21		
Mahaska	Feb. 1–28	1		
Page	Feb. 1–28	12		
Polk	Feb. 1–28	4		
Pottawattamie	Feb. 1–28	6		
Scott	Feb. 1–28	3		
Sioux	Feb. 1–28	1		
Union	Feb. 1–28	2		
Woodbury	Feb. 1–28	2		
Total for State		66		
*Kentucky:				
Lexington	Feb. 26–Mar. 4	1		
Paducah	Feb. 26–Mar. 4	3		
Total for State		4		
Louisiana:				
New Orleans	Feb. 26–Mar. 4	11		
Maine	Jan. 1–Feb. 28			No cases.
Maryland:				
Counties—				
Baltimore	Feb. 1–28	2		
Garrett	Feb. 1–28	2		
Total for State		4		
Michigan:				
Counties—				
Alger	Feb. 1–28	1		
Barry	Feb. 1–28	1		
Calhoun	Feb. 1–28	4		
Cass	Feb. 1–28	2		
Charlevoix	Feb. 1–28	19		
Cheboygan	Feb. 1–28	4		
Emmet	Feb. 1–28	33		
Genesee	Feb. 1–28	5		
Gladwin	Feb. 1–28	4		
Gratiot	Feb. 1–28	3		
Houghton	Feb. 1–28	5		
Ingham	Feb. 1–28	1		
Ionia	Feb. 1–28	16		
Isabella	Feb. 1–28	4		
Keweenaw	Feb. 1–28	4		
Livingston	Feb. 1–28	1		
Mackinac	Feb. 1–28	4		
Macomb	Feb. 1–28	7		
St. Clair	Feb. 1–28	5		
Sanilac	Feb. 1–28	5		
Total for State		128		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received During Week Ended March 17, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
*Missouri:				
St. Louis	Feb. 28–Mar. 4	3		
New York:				
Counties—				
Niagara	Dec. 1–31	1		Reported out of date.
North Dakota:				
Counties:				
Billings	Feb. 1–28	11		
Lamoure	Feb. 1–28	6		
McIntosh	Feb. 1–28	1		
Stutsman	Feb. 1–28	8		
Total for State		26		
Ohio:				
Counties—				
Ashland	Feb. 1–28	1		
Clark	Feb. 1–28	5	1	
Delaware	Feb. 1–28	1		
Franklin	Feb. 1–28	1		
Hamilton	Feb. 1–28	3		
Miami	Feb. 1–28	1		
Montgomery	Feb. 1–28	1		
Total for State		13	1	
Oklahoma:				
Counties—				
Beckham	Jan. 1–31	25		
Blaine	Jan. 1–31	9		
Caddo	Jan. 1–31	20		
Canadian	Jan. 1–31	7		
Cherokee	Jan. 1–31	2		
Choctaw	Jan. 1–31	14		
Comanche	Jan. 1–31	4		
Custer	Jan. 1–31	5		
Grady	Jan. 1–31	2		
Hughes	Jan. 1–31	13		
Jackson	Jan. 1–31	7		
Johnston	Jan. 1–31	1		
Lincoln	Jan. 1–31	49		
McCurtain	Jan. 1–31	20		
Nowata	Jan. 1–31	9		
Okfuskee	Jan. 1–31	5		
Oklahoma	Jan. 1–31	11		
Okmulgee	Jan. 1–31	13		
Osage	Jan. 1–31	2		
Pontotoc	Jan. 1–31	2		
Pottawatomie	Jan. 1–31	6		
Seminole	Jan. 1–31	5		
Tulsa	Jan. 1–31	1		
Washita	Jan. 1–31	1		
Woods	Jan. 1–31	1		
Total for State		234		
*Tennessee:				
Counties—				
Davidson—				
Nashville	Feb. 26–Mar. 4	1		
Knox—				
Knoxville	Feb. 26–Mar. 4	6		
Shelby	Feb. 1–28	116		
Total for State		123		
Utah:				
Counties—				
Beaver	Jan. 1–31	20		
Boxelder	Jan. 1–31	20		
Davis	Jan. 1–31	2		
Iron	Jan. 1–31	17		
Juab	Jan. 1–31	3		
Millard	Jan. 1–31	25		
Piute	Jan. 1–31	14		
Salt Lake	Jan. 1–31	25		
Utah	Jan. 1–31	22		
Washington	Jan. 1–31	2		
Weber	Jan. 1–31	10		
Total for State		160		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received During Week Ended March 17, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
Wisconsin:				
Counties—				
Ashland	Feb. 1-28	5		
Buffalo	Feb. 1-28	1		
Chippewa	Feb. 1-28	2		
Douglas	Feb. 1-28	1		
Dunn	Feb. 1-28	5		
Eau Claire	Feb. 1-28	4		
Iowa	Feb. 1-28	16		
La Crosse	Feb. 1-28	1		
Lafayette	Feb. 1-28	3		
Lincoln	Feb. 1-28	1		
Milwaukee	Feb. 1-28	2		
Oneida	Feb. 1-28	2		
Pierce	Feb. 1-28	1		
St. Croix	Feb. 1-28	3		
Vernon	Feb. 1-28	6		
Total for State		53		

Reports Received from December 31, 1910, to March 10, 1911.

[For reports received from June 25, 1910, to Dec. 30, 1910, see Public Health Reports for Dec. 30, 1910. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.]

Places.	Date.	Cases.	Deaths.	Remarks.
Alabama:				
Montgomery	Dec. 11-Feb. 14	9		
California:				
Counties—				
Alameda	Dec. 1-31	3		
Imperial	Dec. 1-31	1		
Humboldt	Dec. 1-Jan. 31	2		
Kern	Dec. 1-31	1		
Los Angeles	Dec. 1-31	1		
Mariposa	Jan. 1-31	1		
Riverside	Jan. 1-31	1		
San Bernardino	Jan. 1-31	3		
San Diego	Dec. 1-Jan. 31	15	1	
San Francisco	Dec. 1-Jan. 31	10		
San Joaquin	Dec. 1-31	2		
Ventura	Jan. 1-31	9		
Total for State		49	1	
Colorado:				
Counties—				
Adams	Dec. 1-Jan. 31	6		
Arapahoe	Dec. 1-Jan. 31	15		
Archuleta	Dec. 1-Jan. 31	20		
Boulder	Dec. 1-Jan. 31	21		
Conejos	Dec. 1-31	2		
Costilla	Jan. 1-31	5		
Denver	Dec. 1-Jan. 31	152		
Eagle	Jan. 1-31	1		
El Paso	Dec. 1-31	1		
Fremont	Dec. 1-Jan. 31	8		
Garfield	Jan. 1-31	4		
Gilpin	Jan. 1-31	1		
Grand	Dec. 1-31	2		
Huerfano	Dec. 1-31	13		
Jefferson	Dec. 1-31	5		
Kit Carson	Jan. 1-31	1		
La Plata	Dec. 1-Jan. 31	14		
Larimer	Jan. 1-31	17		
Las Animas	Dec. 1-Jan. 31	37		
Mineral	Jan. 1-31	2		
Montezuma	Dec. 1-31	1		
Montrose	Jan. 1-31	2		
Morgan	Dec. 1-Jan. 31	33		
Pueblo	Dec. 1-31	3	1	
Rio Grande	Jan. 1-31	9		
Saguache	Dec. 1-31	3		
Teller	Jan. 1-31	1		
Total for State		379	1	

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
Connecticut	Dec. 1–Jan. 31			No cases.
District of Columbia	Jan. 15–21	2		
Florida:				
Counties—				
Alachua	Dec. 18–Feb. 18	41	1	
Baker	Jan. 8–14	1		
Bradford	Jan. 16–Feb. 4	4		
Brevard	Feb. 19–25	5		
Calhoun	Jan. 29–Feb. 4	20		
Citrus	Jan. 8–14	1		
Dade	Dec. 25–Feb. 18	3		
Duval	Jan. 1–Feb. 25	93	1	
Escambia	Jan. 1–Feb. 25	37		
Franklin	Jan. 8–21	4		
Gadsden	Dec. 18–Feb. 18	61		
Hillsboro	Dec. 25–Feb. 25	62		
Jackson	Dec. 25–Feb. 25	65		
Jefferson	Feb. 5–11	2		
Lafayette	Jan. 16–Feb. 4	6		
Lake	Jan. 22–28	6		
Lee	Jan. 8–Feb. 25	14		
Leon	Dec. 18–Feb. 18	71	1	
Levy	Jan. 29–Feb. 4	2		
Madison	Dec. 18–Jan. 21	19		
Nassau	Jan. 16–21	2		
Orange	Jan. 16–21	1		
Osceola	Dec. 18–24	1		
Polk	Dec. 18–Feb. 25	15		
Putnam	Feb. 12–18	1		
St. John	Jan. 22–Feb. 11	2		
Santa Rosa	Jan. 8–Feb. 25	34		
Suwanee	Jan. 16–21	1		
Taylor	Jan. 8–Feb. 4	140		
Volusia	Jan. 22–Feb. 11	12		
Walton	Dec. 25–Feb. 25	8		
Washington	Jan. 8–14	4		
Total for State		738	3	
Illinois:				
Counties—				
Bond	Jan. 1–31	1		
Coles	Jan. 1–31	5		
Cook, exclusive of Chicago.	Jan. 1–31	2		
Chicago	Jan. 1–31	14		
Kane	Jan. 1–31	1		
McLean	Jan. 1–31	1		
Madison	Jan. 1–31	4		
Peoria	Jan. 1–31	5		
Saline	Jan. 1–31	3		
Stevenson	Jan. 1–31	3		
Union	Jan. 1–31	7		
Vermilion	Jan. 1–31	1		
Williamson	Jan. 1–31	1		
Total for State		48		
Indiana:				
Counties—				
Cass	Jan. 1–31	4		
Decatur	Jan. 1–31	2		
Dekalb		5		
Elkhart	Dec. 1–31	5		
Howard	Dec. 1–31	1		
Jennings	Jan. 1–31	6		
Knox	Dec. 1–Jan. 31	3		
Madison	Dec. 1–Jan. 31	132		
Marion	Jan. 1–31	1		
Montgomery	Dec. 1–Jan. 31	6		
Noble	Jan. 1–31	1		
Posey	Jan. 1–31	1		
Steuben	Jan. 1–31	2		
Vigo	Jan. 1–31	19		
Wayne	Jan. 1–31	12		
Total for State		200		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
Iowa:				
Counties—				
Benton	Jan. 1-31	1		
Buena Vista	Dec. 1-31	1		
Guthrie	Jan. 1-31	2		
Hancock	Jan. 1-31	3		
Jefferson			1	Year 1910, in delinquent report received after Jan. 1, 1911.
Johnson	Jan. 1-31	1		
Lee	Dec. 1-31	1		
Linn	Dec. 1-Jan. 31	37		
Lucas	Jan. 1-31	1		
Lyon	Dec. 1-31	3		
Marshall	Dec. 1-Jan. 31	8		
Page	Dec. 1-Jan. 31	22	1	
Polk	Dec. 1-Jan. 31	6		
Pottawatamie	Jan. 1-31	3		
Scott	Dec. 1-Jan. 31	4		
Taylor	Dec. 1-31	64		
Union	Jan. 1-31	1		
Warren	Dec. 1-31	1		
Webster	Dec. 1-31	10		
Winnebago	Jan. 1-31	1		
Woodbury	Dec. 1-Jan. 31	11		
Total for State		181	2	
Kansas:				
Counties—				
Pawnee	Nov. 1-30	1		Not previously reported.
Reno	Nov. 1-30	1		Do.
Allen	Dec. 1-31	5		
Atchison	Dec. 1-31	4		
Brown	Dec. 1-31	36		
Butler	Dec. 1-31	1		
Cherokee	Dec. 1-31	1		
Clay	Dec. 1-31	1		
Decatur	Dec. 1-31	1		
Dickinson	Dec. 1-31	5		
Doniphan	Dec. 1-31	1		
Jefferson	Dec. 1-31	1		
Johnson	Dec. 1-31	4		
Kingman	Dec. 1-31	1		
Leavenworth—				
Leavenworth	Dec. 1-31	2		
Marshall	Dec. 1-31	78		
Montgomery	Dec. 1-31	4		
Nemeha	Dec. 1-31	1		
Osage	Dec. 1-31	1		
Reno	Dec. 1-31	1		
Rooks	Dec. 1-31	1	1	
Shawnee	Dec. 1-31	2		
Sumner	Dec. 1-31	6		
Wyandotte, exclusive of Kansas City.	Dec. 1-31	9		
Kansas City	Dec. 1-31	11		
Total for State		179	1	
***Kentucky:**				
Paducah	Jan. 23-Feb 25	16		
Louisiana:				
Parishes—				
Ascension	Dec. 1-31	1		
East Baton Rouge	Dec. 1-31	25		
East Feliciana	Dec. 1-31	30		
Iberville	Dec. 1-31	6		
Orleans—				
New Orleans	Dec. 18-Feb. 25	122	1	
Rapides	Dec. 1-31	1		
St. Charles	Dec. 1-31	4		
St. John	Dec. 1-31	1		
Tangipahoa	Nov. 1-Dec. 31	22		
Tensas	Dec. 1-31	9		
Washington	Dec. 1-31	1		
Total for State		222	1	
Maine (entire State)	Dec. 1-31			No cases.

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
Maryland:				
County—				
Garrett	Jan. 1–31	8		Dec. 1–31, no cases.
Massachusetts	Dec. 1–31			No cases.
Michigan:				
Counties—				
Alcona	Dec. 1–31	1		
Alger	Dec. 1–31	1		
Alpena	Jan. 1–31	1		
Antrim	Jan. 1–31	1		
Arenac	Dec. 1–Jan. 31	7		
Bay	Dec. 1–Jan. 31	2		
Calhoun	Dec. 1–Jan. 31	13	1	
Charlevoix	Dec. 1–Jan. 31	5		
Cheboygan	Dec. 1–Jan. 31	26		
Clare	Jan. 1–31	8		
Clinton	Dec. 1–31	3		
Crawford	Dec. 1–Jan. 31	6		
Eaton	Dec. 1–Jan. 31	6		
Emmet	Jan. 1–31	30		
Genesee	Dec. 1–Jan. 31	9	1	
Gladwin	Dec. 1–31		1	Case reported in November.
Grand Traverse	Dec. 1–31	1		
Gratiot	Dec. 1–Jan. 31	7		
Huron	Jan. 1–31	8		
Ingham	Dec. 1–31	2		
Ionia	Jan. 1–31	3		
Isabella	Dec. 1–Jan. 31	10		
Kalamazoo	Dec. 1–Jan. 31	6		
Keweenaw	Dec. 1–Jan. 31	12		
Lake	Dec. 1–31	3		
Lapeer	Dec. 1–31	1		
Leelanau	Jan. 1–31	2		
Marquette	Dec. 1–Jan. 31	10		
Midland	Dec. 1–31	3		
Missaukee	Dec. 1–31	3		
Monroe	Dec. 1–31	2		
Muskegon	Jan. 1–31	1		
Newaygo	Jan. 1–31	3		
Presque Isle	Dec. 1–31	1		
Saginaw	Dec. 1–31	3	3	
Salinac	Jan. 1–31	3		
St. Clair	Dec. 1–Jan. 31	2		
Washtenaw	Dec. 1–Jan. 31	3		
Wayne	Dec. 1–31	1		
Wexford	Dec. 1–31	5		
Total for State		214	6	
Minnesota:				
Counties—				
Beltrami	Dec. 19–Jan. 16	2		
Bigstone	Dec. 26–Jan. 1	1		
Blue Earth	Dec. 19–25	1		
Douglas	Dec. 5–Jan. 1	3		
Fillmore	Nov. 27–Dec. 4	1		
Hennepin	Dec. 3–Jan. 30	32		
Kandiyohi	Jan. 24–30	1		
Koochiching	Dec. 5–Jan. 23	11		
Lac qui Parle	Jan. 10–16	1		
Le Sueur	Dec. 26–Jan. 1	3		
Murray	Jan. 17–23	3		
Nobles	Dec. 5–25	3		
Norman	Dec. 12–Jan. 30	16		
Olmstead	Jan. 10–16	1		
Pipestone	Jan. 10–16	3		
Pope	Jan. 3–9	3		
Ramsey	Dec. 5–Jan. 16	86		
St. Louis	Nov. 27–Dec. 4	8		
Sibley	Dec. 26–Jan. 16	2		
Todd	Dec. 5–Jan. 30	22		
Wabasha	Dec. 26–Jan. 1	1		
Wadena	Dec. 26–Jan. 2	2		
Winona	Jan. 17–23	1		
Total for State		207		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
***Missouri:**				
Kansas City	Nov. 1-Jan. 31	119		
St. Joseph	Feb. 5-18	16		
St. Louis	Dec. 18-Feb. 25	20	1	
Springfield	Feb. 5-11	10		
Total for State		165	1	
Montana:				
Counties—				
Beaverhead	Jan. 1-31	1		
Cascade	Dec. 1-Jan. 31	6		
Chouteau	Jan. 1-31	1		
Custer	Dec. 1-Jan. 31	2		
Dawson	Nov. 1-30	4		
Deerlodge	Nov. 1-Jan. 31	13	1	
Missoula	Jan. 1-31	2		
Powell	Jan. 1-31	1		
Ravalli	Dec. 1-31	3		
Silverbow, exclusive of Butte.	Nov. 1-Jan. 31	29		
Butte	Nov. 1-Jan. 31	41		
Teton	Jan. 1-31	1		
Total for State		104	1	
New Jersey:				
County—				
Bergen	Dec. 1-31	2		
Middlesex	Jan. 1-31	1		
Salem	Jan. 1-Feb. 28	27		
Total for State		30		
New York:				
Counties—				
Allegany	Nov. 1-30	1		
Chautauqua	Jan. 1-31	4		
Columbia	Jan. 1-31	1		
Niagara	Jan. 1-31	1		
Onondaga	Jan. 1-31	1		
Tioga	Dec. 1-31	1		
Tompkins	Nov. 1-30	1		
Total for State		10		
North Carolina:				
Counties—				
Alamance	Jan. 1-31	1		
Beaufort	Dec. 1-Jan. 31	35		
Bertie	Jan. 1-31	1		
Bladen	Nov. 1-Jan. 31	63		
Brunswick	Dec. 1-Jan. 31	49		
Burke	Jan. 1-31	1		
Carteret	Nov. 1-Jan. 31	44		
Caswell	Jan. 1-31	9		
Chatham	Dec. 1-Jan. 31	40		
Cleveland	Jan. 1-31			Present.
Columbus	Nov. 1-Jan. 31	63		
Craven	Jan. 1-31	2		
Cumberland	Nov. 1-Jan. 31	32		
Currituck	Jan. 1-31	2		
Duplin	Dec. 1-31	20		
Durham	Nov. 1-Jan. 31	440		
Edgecombe	Nov. 4-Jan. 31	7		
Franklin	Nov. 1-30	1		
Granville	Dec. 1-Jan. 31	15		
Henderson	Dec. 1-Jan. 31	10		
Hertford	Dec. 1-31	1		
Johnston	Dec. 1-31	3		Jan. 1-31, present.
Jones	Jan. 1-31	6		
Lee	Dec. 1-Jan. 31	7		
Lenoir	Jan. 1-31	2		
Martin	Nov. 1-Dec. 31	17		
Mecklenburg	Jan. 1-31	5		
Nash	Nov. 1-30	6		
New Hanover	Nov. 1-Jan. 31	597		
Northampton	Jan. 1-31	12		
Onslow	Dec. 1-Jan. 31	65		
Orange	Jan. 1-31	12		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
North Carolina—Continued.				
Counties—Continued.				
Pasquotank	Nov. 1-30	1		
Pender	Nov. 1-Jan. 31	127		
Person	Jan. 1-31	1		
Pitt	Nov. 1-Jan. 31	26		
Robeson	Nov. 1-Jan. 31	160		
Rowan	Dec. 1-Jan. 31	4		
Sampson	Dec. 1-Jan. 31	21		
Union	Nov. 1-Jan. 31	5		
Vance	Jan. 1-31	18		
Wake	Nov. 1-Jan. 31	21		
Washington	Jan. 1-31	2		
Wayne	Dec. 1-Jan. 31	4		
Wilkes	Jan. 1-31	1		
Total for State		1,917		
North Dakota:				
Counties—				
Billings	Jan. 1-31	11		
Cass	Dec. 1-31	1		
Grand Forks	Jan. 1-31	1		
McIntosh	Jan. 1-31	1		
Morton	Dec. 1-31	1		
Ramsey	Jan. 1-31	1		
Steele	Dec. 1-Jan. 31	19		
Stutsman	Jan. 1-31	9		
Total for State		44		
Ohio:				
Counties—				
Ashland	Jan. 1-31	1		
Clark	Jan. 1-31	46		
Franklin	Dec. 1-Jan. 31	11		
Fulton	Jan. 1-31	4		
Hamilton	Dec. 1-Jan. 31	3		
Lorain	Dec. 1-31	2		
Montgomery	Jan. 1-31	1		
Portage	Dec. 1-31	1		
Ross	Jan. 1-31	1		
Williams	Jan. 1-31	3		
Total for State		73		
Oklahoma:				
Counties—				
Adair	Nov. 1-30	1		
Atoka	Dec. 1-31	1		
Beckham	Nov. 1-Dec. 31	20		
Blaine	Nov. 1-Dec. 31	2		
Bryan	Nov. 1-Dec. 31	16		
Caddo	Nov. 1-30	3		
Canadian	Nov. 1-Dec. 31	27		
Custer	Dec. 1-31	4		
Garfield	Dec. 1-31	1		
Grady	Nov. 1-Dec. 31	3	1	
Green	Nov. 1-30	1		
Hughes	Nov. 1-Dec. 31	12		
Kay	Dec. 1-31	1		
Latimer	Dec. 1-31	1		
McIntosh	Nov. 1-Dec. 31	12		
Major	Dec. 1-31	4		
Marshall	Nov. 1-30	8		
Oklahoma	Dec. 1-31	1		
Osage	Dec. 1-31	1		
Pittsburg	Dec. 1-31	1		
Seminole	Dec. 1-31	4		
Stephens	Dec. 1-31	1		
Tulsa	Nov. 1-Dec. 31	2		
Washington	Dec. 1-31	1		
Washita	Nov. 1-30	1		
Woods	Dec. 1-31	10		
Total for State		139	1	
Pennsylvania, entire State	Oct. 1-31			No cases.
	Nov. 1-Dec. 31	3		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
South Carolina:				
Camden	Jan. 15-21	1		
Seven Mile	Mar. 1	9	1	
Total for State		10	1	
Tennessee:				
Counties—				
Davidson—				
Nashville	Jan. 8-Feb. 4	2	2	
Hamilton—				
Chattanooga	Jan. 1-Feb. 18	7	1	
Knox—				
Knoxville	Jan. 22-Feb. 25	6		
Shelby	Nov. 1-Dec. 31	139	2	
Total for State		154	5	
Texas:				
Counties—				
Cameron	Jan. 1-31	31		
Cherokee	Jan. 1-31	2		
Collin	Jan. 1-31	20		
Dallas	Dec. 1-31	24		
El Paso	Jan. 1-31	17	3	
Grimes	Nov. 1-30	4		
Guadaloupe	Jan. 1-31	5	2	
Henderson	Nov. 1-Jan. 31	13		
Hidalgo	Dec. 1-31	1		
Jones	Jan. 1-31	3		
McLennan	Nov. 1-Dec. 31	4		
Waco	Jan. 1-31	7		
Marion	Dec. 1-31	3		
Matagorda	Jan. 1-31	5		
Nueces	Jan. 1-31	1		
Orange	Jan. 1-31	7		
Runnels	Jan. 1-31	1		
Swisher	Dec. 1-31	2		
Tarrant	Dec. 1-Jan. 31	3		
Taylor	Jan. 1-31	1		
Uvalde	Jan. 1-31	1		
Van Zant—				
Willis Point	Nov. 1-Jan. 31	8	1	
Total for State		198	6	
Utah:				
Counties—				
Beaver	Nov. 1-Dec. 31	86		
Cache	Nov. 1-30	8		
Davis	Dec. 1-31	2		
Iron	Nov. 1-Dec. 31	62		
Juab	Nov. 1-30	5		
Millard	Nov. 1-Dec. 31	11		
Salt Lake	Nov. 1-Dec. 31	42		
Sanpete	Dec. 1-31	1		
Sevier	Dec. 1-31	30		
Washington	Nov. 1-Dec. 31	47		
Weber	Nov. 1-Dec. 31	9		
Total for State		303		
Washington:				
Counties—				
King	Dec. 1-31	20		
Pierce	Dec. 1-31	1		
Skagit	Nov. 1-Dec. 31	93		
Snohomish	Dec. 1-31	6		
Spokane	Nov. 1-30	1		
Stevens	Dec. 1-31	1		
Total for State		122		
Wisconsin:				
Counties—				
Ashland	Jan. 1-31	1		
Barron	Jan. 1-31	3		
Chippewa	Dec. 1-Jan. 31	4		
Dane	Jan. 1-31	2		
Dunn	Dec. 1-Jan. 31	8		
Green	Jan. 1-31	2		

SMALLPOX IN THE UNITED STATES—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

Place.	Date.	Cases.	Deaths.	Remarks.
Wisconsin—Continued.				
Counties—Continued.				
Iowa	Dec. 1-Jan. 31	30		
Jefferson	Dec. 1-Jan. 31	10		
Lafayette	Dec. 1-Jan. 31	8		
La Crosse	Dec. 1-Jan. 31	3		
Milwaukee	Dec. 1-Jan. 31	8		
Oneida	Dec. 1-Jan. 31	3		
St. Croix	Dec. 1-Jan. 31	4		
Vernon	Jan. 1-31	4		
Vilas	Dec. 1-31	1		
Walworth	Jan. 1-31	1		
Washington	Dec. 1-31	1		
Total for State		93		
Grand total for the United States.		5,817	30	

MORBIDITY AND MORTALITY.

MORBIDITY AND MORTALITY TABLE, CITIES OF THE UNITED STATES, FOR WEEK ENDED FEBRUARY 25, 1911.

Cities.	Population, United States, census 1910.	Total deaths, from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cities having over 500,000 inhabitants.														
Baltimore, Md	558,485	.....	46	6	176	2	28	1	....	....	40	35	8	3
Boston, Mass	670,585	280	42	5	70	....	33	3	....	....	57	18	3	1
Chicago, Ill	2,185,283	680	169	13	164	2	188	12	3	....	178	86	20	7
Cleveland, Ohio	560,663	166	24	2	35	1	85	8	....	....	30	26	3	1
New York, N. Y	4,766,883	1,670	348	32	381	13	512	21	....	....	569	209	15	4
Philadelphia, Pa	1,549,008	552	118	16	466	13	61	5	....	....	84	55	9	4
Pittsburg, Pa	533,905	178	9	3	20	1	16	3	....	....	29	19	16	6
St. Louis, Mo	687,029	226	24	4	534	7	66	7	5	....	31	20	3	....
Cities having from 300,000 to 500,000 inhabitants.														
Buffalo, N. Y	423,715	167	18	4	16	....	21	....	....	....	22	10	15	1
Cincinnati, Ohio	364,463	103	9	....	1	....	31	1	2	....	25	15	1	....
Detroit, Mich	465,766	136	14	2	....	....	21	2	....	....	11	4	5	1
Milwaukee, Wis	373,857	127	25	3	14	....	32	5	....	....	9	9	15	1
Newark, N. J	347,469	114	34	1	....	....	33	....	....	....	16	13	2	1
New Orleans, La	339,075	.....	7	....	112	2	12	....	3	....	32	21	3	1
San Francisco, Cal	416,912	138	4	....	11	....	13	....	....	....	20	17	4	4
Washington, D. C	331,069	153	11	1	23	....	12	....	....	....	24	21	9	2
Cities having from 200,000 to 300,000 inhabitants.														
Jersey City, N. J	267,779	.....	....	....	2	....	....	....	....	....	7	....	....	....
Providence, R. I	224,326	80	16	1	2	....	12	1	....	....	6	5	....	....
Seattle, Wash	237,194	50	1	....	87	....	7	....	13	....	6	12	....	....
Cities having from 100,000 to 200,000 inhabitants.														
Bridgeport, Conn	102,054	.....	....	....	....	....	....	....	....	....	....	....	....	....
Cambridge, Mass	104,839	40	5	1	19	1	5	....	....	....	7	4	....	....
Columbus, Ohio	181,548	69	1	1	8	....	5	....	....	....	3	4	....	....
Dayton, Ohio	116,577	32	2	....	1	....	2	....	3	....	2	2	....	....
Fall River, Mass	119,295	.....	....	....	....	....	....	....	....	....	....	....	....	....
Grand Rapids, Mich	112,571	39	3	1	154	....	10	1	....	....	2	2	1	....

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ending February 25, 1911—Continued.

Cities.	Population, United States, census 1910.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
***Cities having from 100,000 to 200,000 inhabitants*—Cont.**														
Lowell, Mass.	106,294	34	10	1	1	....	6	....	....	....	2	3	4	1
Nashville, Tenn.	110,364	40	3	....	62	1	1	....	....	....	2	4	1	2
Oakland, Cal.	150,174	42	4	....	....	....	3	....	....	....	....	3	1	....
Paterson, N. J.	125,600	....	4	....	....	....	5	....	....	....	4	....	....	....
Spokane, Wash.	104,402	17	4	....	25	....	5	....	....	....	....	1	2	....
Toledo, Ohio.	168,497	62	8	1	2	....	3	....	....	....	....	5	1	....
Worcester, Mass.	145,986	62	7	2	3	....	8	....	....	....	7	6	....	....
Cities having from 50,000 to 100,000 inhabitants.														
Allentown, Pa.	51,913	....	....	....	....	....	....	....	....	....	....	....	....	....
Altoona, Pa.	52,127	16	2	1	....	....	....	....	....	....	....	....	....	....
Bayonne, N. J.	55,545	....	2	1	9	....	2	....	....	....	1	....	....	....
Brockton, Mass.	56,878	14	....	....	1	....	2	1	....	....	2	2	1	....
Camden, N. J.	94,538	....	5	1	11	....	2	....	....	....	1	....	....	....
Canton, Ohio.	50,217	14	1	....	....	....	2	....	....	....	....	2	....	1
Covington, Ky.	53,270	13	....	....	....	....	3	....	....	....	....	3	1	....
Des Moines, Iowa.	86,368	....	2	....	....	....	2	....	3	....	....	....	....	....
Duluth, Minn.	78,466	30	....	1	5	....	6	....	....	....	7	3	3	1
Elizabeth, N. J.	73,409	20	1	....	3	....	17	....	....	....	....	1	....	....
Erie, Pa.	66,525	....	....	....	....	....	....	....	....	....	....	....	....	....
Evansville, Ind.	69,647	26	4	1	23	....	4	....	....	....	3	4	3	1
Fort Wayne, Ind.	63,933	....	....	....	....	....	....	....	....	....	....	....	....	....
Harrisburg, Pa.	64,186	27	6	1	1	....	2	....	....	....	7	....	....	....
Hartford, Conn.	98,915	44	7	....	....	....	22	....	....	....	2	3	....	1
Hoboken, N. J.	70,324	....	1	2	22	....	5	....	....	....	....	....	....	....
Houston, Tex.	78,800	....	....	....	....	....	....	....	....	....	....	....	....	....
Jacksonville, Fla.	57,699	40	....	....	1	....	6	....	5	....	....	5	....	....
Johnstown, Pa.	55,482	24	1	....	14	....	2	....	....	....	2	2	....	....
Kansas City, Kans.	82,331	22	3	....	1	....	3	....	4	....	1	2	....	....
Lawrence, Mass.	85,892	....	....	....	....	....	....	....	....	....	....	....	....	....
Lynn, Mass.	89,336	24	3	1	13	....	8	....	....	....	4	2	1	....
Manchester, N. H.	70,063	42	4	1	1	....	1	....	....	....	2	2	1	....
New Bedford, Mass.	96,652	....	1	....	3	....	2	....	....	....	7	6	1	....
Oklahoma, Okla.	64,205	21	1	....	9	....	2	1	....	....	1	3	1	....
Passaic, N. J.	54,773	18	4	1	15	....	2	....	....	....	....	....	....	....
Portland, Me.	58,571	....	....	....	....	....	....	....	....	....	....	....	....	....
Reading, Pa.	96,071	34	2	1	28	....	9	2	....	....	11	3	3	....
Saginaw, Mich.	50,510	....	....	....	....	....	....	....	....	....	....	....	....	....
St. Joseph, Mo.	77,403	....	....	....	....	....	....	....	....	....	....	....	....	....
Salt Lake City, Utah.	92,777	....	....	....	....	....	....	....	....	....	....	....	....	....
San Antonio, Tex.	96,614	41	....	....	1	....	1	....	....	....	....	12	....	....
Schenectady, N. Y.	72,826	23	1	....	2	....	5	....	....	....	1	3	....	....
Somerville, Mass.	77,236	30	4	1	9	....	3	....	....	....	4	3	....	....
South Bend, Ind.	53,684	15	1	....	1	....	5	....	1	....	....	1	....	....
Springfield, Ill.	51,678	27	3	....	....	....	14	....	....	....	....	4	....	....
Springfield, Mass.	88,926	22	2	....	14	....	5	....	....	....	4	2	2	1
Tacoma, Wash.	83,743	23	1	....	2	....	....	....	3	....	....	....	....	....
Terre Haute, Ind.	58,157	....	....	....	....	....	....	....	....	....	....	....	....	....
Trenton, N. J.	96,815	43	6	1	....	....	2	....	....	....	3	1	8	2
Utica, N. Y.	74,419	20	6	1	17	....	10	....	....	....	....	....	....	....
Wichita, Kans.	52,450	9	....	....	32	....	3	....	....	....	....	....	....	....
Wilkes-Barre, Pa.	67,105	17	9	1	....	....	1	....	....	....	1	....	....	....
Wilmington, Del.	87,411	27	....	....	....	....	....	....	....	....	....	2	....	1
Yonkers, N. Y.	79,803	26	5	....	12	....	12	....	....	....	1	....	....	....
Youngstown, Ohio.	79,066	....	....	....	....	....	....	....	....	....	....	....	....	....
Cities having from 25,000 to 50,000 inhabitants.														
Atlantic City, N. J.	46,150	8	2	....	2	....	....	....	....	....	1	....	....	....
Auburn, N. Y.	34,668	....	....	....	....	....	....	....	....	....	....	....	....	....
Aurora, Ill.	29,807	....	....	....	....	....	....	....	....	....	....	....	....	....
Bay City, Mich.	45,166	....	....	....	....	....	....	....	....	....	....	....	....	....
Berkeley, Cal.	40,434	....	....	....	....	....	....	....	....	....	....	....	....	....
Binghamton, N. Y.	48,443	32	....	....	36	....	4	....	....	....	1	2	....	....
Bloomington, Ill.	25,678	....	....	....	....	....	....	....	....	....	....	....	....	....

MORBIDITY AND MORTALITY—Continued.

***Morbidity and mortality table, cities of the United States, for week ending February 25, 1911*—Continued.**

Cities.	Population, United States, census 1910.	Total deaths, from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
***Cities having from 25,000 to 50,000 inhabitants*—Cont'd.**														
Brookline, Mass.	27,792	11	1	....	3	....	....	....	....	....	2	....	....	....
Charlotte, N. C.	34,014	....	....	....	....	....	....	....	....	....	....	....	....	....
Chattanooga, Tenn.	44,604	....	....	....	....	....	....	....	....	....	3	....	....	....
Chelsea, Mass.	32,452	24	1	....	5	....	7	....	....	....	1	....	....	....
Chicopee, Mass.	25,401	....	3	....	....	....	....	....	....	....	1	1	....	....
Council Bluffs, Iowa	29,292	9	....	....	10	....	....	....	....	....	....	....	2	....
Danville, Ill.	27,871	6	....	....	1	....	1	....	....	....	....	....	....	....
Decatur, Ill.	31,140	....	....	4	1	....	....	1	1	....	....	....	....	....
Dubuque, Iowa	38,494	5	....	....	....	....	....	....	....	....	....	1	....	....
East Orange, N. J.	34,371	3	3	....	3	....	8	1	....	....	1	....	....	....
Elmira, N. Y.	37,176	14	1	1	....	....	....	....	....	....	1	1	1	....
El Paso, Tex.	39,279	22	....	....	1	....	3	....	2	....	8	4	....	1
Everett, Mass.	33,484	7	2	....	....	....	2	....	....	....	2	....	....	....
Frankfort, Ind.	26,672	....	....	....	....	....	....	....	....	....	....	....	....	....
Haverhill, Mass.	44,115	....	4	....	....	....	2	....	....	....	1	....	....	....
Hazleton, Pa.	25,452	....	2	....	....	....	....	....	....	....	....	....	1	1
Kalamazoo, Mich.	39,437	19	....	....	34	....	2	....	....	....	1	3	....	....
Kingston, N. Y.	25,908	....	....	....	....	....	....	....	....	....	....	....	....	....
Knoxville, Tenn.	36,346	14	....	....	50	1	1	....	4	....	....	....	....	....
La Crosse, Wis.	30,417	5	....	....	5	....	2	....	....	....	1	1	....	....
Lancaster, Pa.	47,227	13	2	1	1	....	....	....	....	....	2	1	....	....
Lexington, Ky.	35,099	17	....	....	3	....	....	....	....	....	3	1	....	....
Lynchburg, Va.	29,494	16	5	....	3	....	1	....	....	....	1	....	....	....
McKeesport, Pa.	42,694	18	1	....	2	....	....	....	....	....	....	4	2	....
Malden, Mass.	44,404	11	1	....	3	....	4	....	....	....	1	1	....	....
Montgomery, Ala.	38,136	19	....	....	30	....	....	....	1	....	1	....	....	....
Mount Vernon, N. Y.	30,919	7	4	....	1	....	5	....	....	....	....	....	....	....
Newcastle, Pa.	36,280	....	2	....	....	....	....	....	....	....	....	....	3	....
Newport, Ky.	30,309	8	2	1	....	....	2	....	....	....	1	1	....	....
Newport, R. I.	27,149	....	....	....	....	....	....	....	....	....	....	....	....	....
Newton, Mass.	39,806	10	....	....	8	....	....	....	....	....	....	2	....	....
Niagara Falls, N. Y.	30,445	13	2	1	1	....	2	....	....	....	1	....	31	2
Norristown, Pa.	27,875	7	....	....	1	....	....	....	....	....	1	....	2	....
Orange, N. J.	29,630	15	1	....	5	....	3	....	....	....	3	....	....	....
Pasadena, Cal.	30,291	12	1	....	....	....	1	....	....	....	....	1	....	....
Pittsfield, Mass.	32,121	5	....	....	....	....	....	....	....	....	1	....	....	....
Portsmouth, Va.	33,190	13	....	....	5	....	1	....	....	....	....	....	....	....
Poughkeepsie, N. Y.	27,936	17	....	....	....	....	17	....	....	....	3	1	1	....
Quincy, Mass.	32,642	7	....	....	....	....	13	....	....	....	....	....	....	....
Roanoke, Va.	34,874	16	4	....	3	....	2	....	....	....	1	1	....	....
Sacramento, Cal.	44,696	12	2	....	1	....	....	....	....	....	2	2	1	....
Salem, Mass.	43,697	....	3	....	4	....	2	....	....	....	1	1	....	1
San Diego, Cal.	39,598	11	....	....	3	....	4	....	....	....	2	2	....	....
San Jose, Cal.	28,946	8	....	....	....	....	2	....	....	....	....	....	....	....
Sioux City, Iowa	47,828	....	5	2	....	....	2	....	1	....	....	....	....	....
Springfield, Ohio	46,921	12	1	....	2	....	1	....	....	....	8	....	....	....
Superior, Wis.	40,384	12	2	....	....	....	....	....	....	....	....	1	....	....
Taunton, Mass.	34,259	14	....	....	....	....	....	....	....	....	2	2	....	....
Topeka, Kans.	43,684	....	....	....	....	....	....	....	....	....	....	....	....	....
Waltham, Mass.	27,834	8	1	....	1	....	3	....	....	....	2	....	....	....
Wheeling, W. Va.	41,641	19	....	....	1	....	1	....	....	....	4	2	1	....
Williamsport, Pa.	31,860	16	....	....	....	....	1	....	....	....	....	2	....	1
York, Pa.	44,750	12	4	....	....	....	....	....	....	....	....	1	....	....
Zanesville, Ohio.	28,026	10	....	....	2	....	....	....	....	....	....	....	1	2
Cities having less than 25,000 inhabitants.														
Ann Arbor, Mich.	14,817	5	....	....	10	....	2	....	....	....	2	1	....	....
Ashtabula, Ohio.	18,266	....	....	....	....	....	....	....	....	....	....	....	....	....
Beaver Falls, Pa.	12,191	0	....	....	5	....	....	....	....	....	....	....	1	....
Bennington, Vt.	8,698	0	1	....	....	....	....	....	....	....	....	....	....	....
Biddeford, Me.	17,079	9	2	....	....	....	....	1	....	....	....	1	....	....
Braddock, Pa.	19,357	8	2	....	2	....	....	....	....	....	....	1	....	....
Butler, Pa.	20,728	....	....	....	....	....	....	....	....	....	....	....	....	....
Cambridge, Ohio.	11,327	1	....	....	....	....	....	....	....	....	....	....	....	....
Camden, S. C.	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Carbondale, Pa.	17,040	8	1	....	3	....	3	....	....	....	....	....	....	....

MORBIDITY AND MORTALITY—Continued.

Morbidity and mortality table, cities of the United States, for week ending February 25, 1911—Continued.

Cities.	Population, United States, census 1910.	Total deaths, from all causes.	Diphtheria.		Measles.		Scarlet fever.		Smallpox.		Tuberculosis.		Typhoid fever.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cities having less than 25,000 inhabitants—Continued.														
Clinton, Mass.	13,075	5	2											
Coffeyville, Kans.	12,687	3							2					
Columbus, Ga.	20,554	7												
Columbus, Ind.		2									1	1		
Concord, N. H.	21,497	7	1		11		1							
Cumberland, Md.	21,839	10			1							1	3	1
Dunkirk, N. Y.		8			2		3				1	1		
Freeport, Ill.	17,567													
Galesburg, Ill.	22,089	4												
Gloucester, Mass.	24,398	6										1		
Greensboro, N. C.	15,895	6			1						1	1		
Harrison, N. J.	14,498	3	1				1							
Homestead, Pa.	18,713	7									1	1	1	
Hyde Park, Mass.	15,507	3			4		1					1		
Kearny, N. J.	18,659	7	3		1		2				3			
Kokomo, Ind.	17,010													
La Fayette, Ind.	20,081	6										2		
Lebanon, Pa.	19,240	6	8				5				1	1		
Manistee, Mich.	12,381													
Manitowoc, Wis.	13,027													
Marinette, Wis.	14,610	4			1						1	1		
Marlboro, Mass.	14,579	3									1			
Massillon, Ohio	13,879	3												
Medford, Mass.	23,150	5			4		1				1		1	
Melrose, Mass.	15,715	0	3		6									
Moline, Ill.	24,199	9	6		11		3					1	1	
Montclair, N. J.	21,550	5					3							
Nanticoke, Pa.	18,877	3										1		
Newburyport, Mass.	14,949	8									1			
North Adams, Mass.	22,019	8	2		1							1		
Northampton, Mass.	19,431	8												
Ottumwa, Iowa.	22,012	12										1		
Paducah, Ky.	22,760	15			3				1			4		
Palmer, Mass.		0	1								1		1	
Peekskill, N. Y.		3	1				5				2			
Plainfield, N. J.	20,550	5					3				1			
Portsmouth, N. H.	11,209		2			83								
Rock Island, Ill.		10	1		6		1							
Rutland, Vt.	13,546													
Saratoga Springs, N. Y.		6											4	1
South Bethlehem, Pa.	19,973	11									1	1	1	
Steelton, Pa.	14,246	4					1				5			
Warren, Ohio	11,081	3												
Wilkinsburg, Pa.	18,924	11									2	1		
Woburn, Mass.	15,308	4	1		1						1			

STATISTICAL REPORTS OF MORBIDITY AND MORTALITY, STATES AND CITIES OF THE UNITED STATES (untabulated).

COLORADO.—Three months ended December 31, 1910. Population, 799,024. Total number of deaths from all causes 2,864, including diphtheria 20, measles 1, scarlet fever 20, smallpox 1, tuberculosis 431, typhoid fever 176. Cases reported: Diphtheria 231, measles 196, scarlet fever 536, smallpox 289, typhoid fever 1,007.

FLORIDA.—Reports from the State board of health show as follows: Week ended February 18, 1911. Diphtheria present in 2 localities (Jacksonville and Ybor City) with 3 cases, smallpox in 10 counties

with 93 cases, malaria in 4 localities with 29 cases, tuberculosis in 5 localities with 9 cases, typhoid fever in 3 localities (Pensacola, Tampa, and Jacksonville) with 4 cases. Week ended February 25, 1911. Diphtheria present in 1 locality with 1 case, smallpox in 9 counties with 77 cases, malaria in 2 localities with 21 cases, tuberculosis in 6 localities with 11 cases, typhoid fever in 3 localities with 4 cases. Week ended March 4, 1911. Diphtheria present in 1 locality (Pensacola) with 1 case, smallpox in 9 counties with 67 cases, malaria in 2 localities (Jacksonville and Tampa) with 18 cases, tuberculosis in 4 localities with 7 cases, typhoid fever in 4 localities with 9 cases.

IOWA.—Month of January, 1911. Population, 2,224,771. Total number of deaths from all causes 2,589, including diphtheria 20, measles 15, scarlet fever 8, tuberculosis 141, typhoid fever 36.

MICHIGAN.—Month of January, 1911. Population, 2,810,173. Total number of deaths from all causes 3,418, including diphtheria 47, measles 17, scarlet fever 19, smallpox 2, tuberculosis 238, typhoid fever 37. Cases reported: Diphtheria 268 in 69 localities, measles 1,415 in 45 localities, scarlet fever 510 in 128 localities, smallpox 125 in 41 localities, tuberculosis 115, typhoid fever 123 in 48 localities.

NEW JERSEY.—Month ended February 10, 1911. Population, 2,537,167. Total number of deaths from all causes 3,923, including diphtheria 76, measles 36, scarlet fever 26, tuberculosis 423, typhoid fever 31.

NEW YORK.—Month of January, 1911. Population, 9,113,614. Total number of deaths from all causes 13,290, including diphtheria 196, measles 70, scarlet fever 123, tuberculosis 1,510, typhoid fever, 91. Cases reported: Diphtheria 1,937, measles 4,128, scarlet fever 3,084, smallpox 7, tuberculosis, pulmonary, 3,038, typhoid fever 420.

OREGON—*Portland*.—Month of January, 1911. Population, 207,-214. Total number of deaths from all causes 230, including diphtheria 4, scarlet fever 2, tuberculosis 26. Cases reported: Diphtheria 25, measles 130, scarlet fever 59, tuberculosis, pulmonary, 31, typhoid fever 1.

FOREIGN AND INSULAR.

ARABIA.

Cholera in Yemen.

Consul Moser at Aden reports February 15:

The official statement of cholera in Yemen shows the occurrence of 84 cases with 74 deaths from January 31 to February 12. Of this number 49 new cases with 54 deaths occurred at Hodeida.

Medical inspection and quarantine measures were imposed January 24 at Aden and Perim on all arrivals from Hodeida and adjacent ports.

CHINA.

Plague in Manchuria and North China.

Consul General Knabenshue at Tientsin reports February 7:

The Chinese Government recently requested several physicians now in its employ in combating plague in Manchuria and north China to telegraph information concerning the disease, its transmission, results of microscopical examination of the blood, etc. Their opinions were published in the issue of the Peking Daily News of February 4.

"Dr. Wu Lien-teh, of the teaching staff of the Chinese medical school in Tientsin, now on duty at Harbin, gives the following:

"While principally pneumonic, 30 per cent of the cases are secondarily septicemic; 7 per cent primarily septicemic, rarely enteric. I have obtained pure cultures of the bacilli of each of these types.

"Microscopical examination shows that the microbe has the usual cultural characteristics, and is apparently the same as that found in bubonic plague.

"The few rats we have been able to examine have been found uninfected. We have examined no fleas, these not being obtainable.

"The virulence of the microbe is multiplied as it passes from man to man. There is considerable evidence that the disease is transmissible by breath as well as through the sputum. Very close contact is, apparently, not necessary. Dr. Shu Shih-ming probably became infected merely through speaking with a servant.

"There has come under my observation no authentic case of recovery. Drs. Mesny and Shu became infected despite their inoculation with the Haffkine vaccine. This was also the case with a number of the Russian medical assistants who died of the disease. The use of a respirator seems to be the most important precaution to be taken to protect the individual.

"Dr. Mesny, whose death is referred to above, was a very prominent physician (French) of Tientsin, who was ordered to Harbin by

the Chinese Government immediately upon the outbreak of the plague in that city. Dr. Shu Shih-ming was a Chinese physician educated in America, who also fell a victim."

"President Nakamura of the South Manchurian Railway, who was asked to give the consensus of opinions of the Japanese physicians at Dalny and in the railway zone, wires as follows:

"Transmission through the air for any distance has not been proved, but rapid infection from intimate contact is observed. No infected rats have been discovered. No recoveries have been reported. Technical phases of disease are now under investigation."

CUBA.

Transmissible Diseases.

The following report of transmissible diseases in the island of Cuba issued by the National Department of Sanitation was forwarded by Acting Asst. Surg. Villoldo, at Habana, February 28:

February 1–10, 1911.

	New cases.	Deaths.	Remaining under treatment.
Tuberculosis	56	94	2,506
Leprosy	1	1	345
Malaria	36	6	181
Typhoid fever	20	4	67
Diphtheria	34	3	26
Scarlet fever	12	0	19
Measles	142	1	241
Varicella	27	1	29
Tetanus in the new born	5	3	2
Filariasis	0	0	1

No quarantinable diseases were reported in the island during the week ended February 25, 1911.

ECUADOR.

Plague and Yellow Fever.

Passed Asst. Surg. Parker at Guayaquil reports February 7:

During the month of January, 1911, plague and yellow fever were reported as follows:

Plague.—At Guayaquil, 56 cases with 20 deaths, a decrease of 29 cases as compared with the preceding month; at Babahoyo, 14 cases with 4 deaths; at Duran, 7 cases with 5 deaths; at Milagro, 7 cases with 5 deaths.

Yellow fever.—At Guayaquil, 39 cases with 15 deaths.

The total mortality at Guayaquil during the month was 340. Population, 70,000.

GREAT BRITAIN.

Rat Plague at Freston, East Suffolk.[1]

Consul General Griffiths at London reports, February 24:

In September, 1910, there were 4 deaths in the village of Freston, in East Suffolk, England, and the symptoms in each instance were

[1] See Public Health Reports, Nov. 25, 1910, p. 1730.

so unusual that the attending physicians had a bacteriological examination made. In the case of 3 of the patients a bacillus was isolated which in morphology and cultural characteristics agreed with the bacillus of plague. Coincident with the outbreak of this disease several dead rats were found in the neighborhood, and upon examination authentic evidence of plague was discovered. Later a hare, a cat (a known rat killer), and dead ferrets were also examined and the diagnosis showed that they also had suffered from plague. Other dead rats and ferrets were examined later, and some of these were also found to be suffering from the same infection. The matter was of such importance that in October, 1910, representatives from the Ipswich borough council health committee and the Samford rural district council met with a representative of the local government board and measures were instituted for the destruction of rats in the districts named.

Various methods have been employed to exterminate the rats and thereby prevent the extension of plague. The public health officials have, in addition to warning notices, made many personal visits to householders and others in the infected district, urging them to cooperate. Supplementary to the work of the rural district councils and private individuals, the officials of the railroad running through East Suffolk have displayed great energy in the destruction of rats along the lines of the railway and in railway property.

In a report made by the county medical officer of health in East Suffolk, in reference to the rat plague, it is stated that—

> Rat clubs are in process of formation, and the success of those started on large estates suggests that the cooperation of farmers and householders in this manner is one of the most satisfactory means of dealing with rats, which are not only now a menace to health, but a constant and direct cause of much financial loss.

HAWAII.

Status of Cholera.

Passed Asst. Surg. Ramus reports the occurrence at Honolulu, from March 8 to 10, of 3 cases of cholera with 1 death; on March 11, 1 case; March 12, 1 case; March 13, 2 cases with 1 death; March 14, 1 case; making a total from date of outbreak to March 14 of 31 cases with 22 deaths.

Record of Plague Infection.

Last case of human plague at Honolulu occurred July 12, 1910.

The last plague-infected rat was found at Aiea, 9 miles from Honolulu, April 12, 1910.

At Hilo the last case of human plague occurred March 23, 1910. A fatal case occurred at Honokaa, 60 miles from Hilo, December 17, 1910, and 2 fatal cases were reported January 31, 1911.

The last plague-infected rat was found at Honokaa February 2, 1911.

Dr. Ramus reports in regard to plague-prevention work, February 20:

HONOLULU.

Week ended February 18, 1911.

Total rats and mongoose taken	685
Rats trapped	675
Mongoose trapped	9
Rats found dead (*Mus alexandrinus*)	1
Examined bacteriologically	577
Classification of rats trapped:	
Mus alexandrinus	70
Mus musculus	245
Mus norvegicus	77
Mus rattus	283
Average number of traps set daily	1,720

INDIA.

CALCUTTA—Cholera, Plague, and Smallpox.

Acting Asst. Surg. Allan reports February 9: During the week ended January 21 there were reported in Calcutta 33 deaths from cholera, 10 from plague, and 1 from smallpox; in all Bengal, 2,727 cases of plague with 2,015 deaths; in all India, 24,783 cases of plague with 20,167 deaths.

JAPAN.

Precautions Against Importation of Plague.

The following statement received from the Home Department of Japan was forwarded by Surg. Irwin at Yokohama February 9:

Vessels arriving at ports in Japan from foreign ports are inspected at the marine quarantine stations of Yokohama, Kobe, Moji, Nagasaki, Hakodate, Karatsu, Suminoe, Kutchinotsu, Kagoshima, and Nawa, and by the local authorities in other open ports. If deemed necessary upon inspection, such measures as disinfection, detention, and the examination of rodents are taken. It may also be noted that since 1899 a prohibition has been placed upon the importation from Chinese ports into Japan proper of such articles as are liable to be infected with plague germs, namely, rags, old cotton, old clothes, old paper, old hides and leather, old feathers and furs, old carpets, and old gunny sacks. The extermination of rodents, bacteriological examinations, prevention of rodents from invading dwelling houses and warehouses, the sanitation of landing places and localities in their vicinity, medical examination of stevedores and other laborers employed in connection with vessels arriving from infected regions, and other measures for the prevention of the introduction of plague are strictly enforced throughout Japan. In consequence of the necessity for carrying out these measures more rigorously and for taking further measures required by the present conditions, the Home Department from time to time issues special notices. Inspectors are occasionally appointed to report on local conditions and to supervise the authorities in charge of sanitary measures.

MADEIRA ISLANDS.

Funchal Declared Free from Cholera.

The Portuguese minister at Washington stated to the Department of State, in a communication dated March 2, that the port of Funchal was officially declared free from cholera February 24.

MEXICO.

ACAPULCO—Mortality Statistics and Health Conditions.

Consul Letcher reports February 9:

The following statistics for the year 1910 were obtained from the register kept by the municipality:

Mortality statistics, 1910.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Fiebre (fever)	.....	1	2	.....	3	5	5	12	1	1	.....	3
Paludismo	.....	4	3	7	4	8	4	1	7	10	8	2
Calenturas	4	.....	1	1	4	1	6	.....	.....	5	.....	.....
Diarrhea	1	.....	4	1	.....	2	4	3	4	2	.....	.....
Dysentery	2	1	1	1	2	5	20	22	7	5	8	6
Meningitis	.....	.....	2	1	1	.....	.....	.....	2	2	2	.....
Tuberculosis	.....	.....	.....	.....	.....	.....	2	1	.....	2	1	1
Intermittent fever	.....	.....	.....	.....	.....	.....	2	1	.....	2	1	1
Casualties	1	3	.....	.....	1	.....	.....	.....	1	2	1	.....
Other causes	8	6	14	8	7	3	12	4	6	10	12	8
Total	16	15	27	20	22	24	55	44	28	41	33	21

The three diseases classified above as "fiebre," "paludismo," and "calenturas" are all embraced under the head of malarial fever. It will be noted that 80 deaths during the year were attributed to dysentery. It was estimated that there were at least 300 cases from July to September, inclusive. The disease usually appears at the beginning of the rainy season.

TAMPICO—Smallpox.

The American consul at Tampico reported March 6 that during the two weeks ended February 11 there were officially reported 32 new cases of smallpox with 8 deaths.

RUSSIA.

Status of Cholera.

Minister Rockhill, at St. Petersburg, reported February 14 to the Department of State:

During the week ended January 28 there were officially reported 4 cases of cholera with 3 deaths in the Government of Podolia and 5 cases with 3 deaths in the Government of Kief.

LIBAU—Examination of Emigrants.

Acting Asst. Surg. Mooning reports February 16 and 24:

During the week ended February 16 there were examined 723 passengers and 95 members of crew of the steamship *Birma*. During the week ended February 24 there were examined 591 passengers and 93 members of crew. All had been in Libau 5 days under observation. No quarantinable diseases were found. There were examined for foodstuffs 406 pieces of baggage.

TRINIDAD.

Plague.

The American consul at Port of Spain, Trinidad, reports March 15 the occurrence of 1 case of plague.

TURKEY.

SMYRNA—Cholera.

Consul General Harris reports February 6:

From January 30 to February 5 there were reported 15 cases of cholera with 11 deaths, making a total to date of 337 cases with 205 deaths.

VENEZUELA.

CARACAS—Yellow Fever.

Chargé d'Affaires Whitehouse reported February 20 to the Department of State:

From January 28 to February 15 there occurred in Caracas 7 cases of yellow fever.

ZANZIBAR.

ZANZIBAR—Smallpox—Examination of Rats.

Consul Weddell reports:

During the period from December 19 to 31, 1910, there were reported 4 new cases of smallpox and 8 deaths, and during the period from January 1 to 22, 1911, 4 new cases and 5 deaths. The total number of cases reported from June 8, 1910, to January 22, 1911, was 253. The total number of persons vaccinated during the same period was 33,953.

During the 4 weeks ended January 22 there were examined for plague infection 2,341 rats. No plague-infected rats were found.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX.

Reports Received During Week Ended March 17, 1911.

[These tables include cases and deaths recorded in reports received by the Surgeon General, Public Health and Marine-Hospital Service, from American consuls, through the Department of State, and from other sources.]

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Yemen—				
Bajil	Jan. 31–Feb. 12	.....	3	
Hodeida	Jan. 31–Feb. 12	49	54	
Menakha	Jan. 31–Feb. 12	8	4	
Obal	Jan. 31–Feb. 12	2	2	
Zaida	Jan. 31–Feb. 12	25	13	
Hawaii:				
Honolulu	Mar. 8–14	8	2	
India:				
Bombay	Jan. 29–Feb. 4	.....	8	
Calcutta	Jan. 15–21	.....	33	
Madras	Jan. 22–Feb. 4	.....	7	
Java:				
Batavia	Jan. 22–28	2	1	
Samarang	Dec. 11–20	9	6	
Madeira:				
Funchal district	Jan. 1–30	327	98	
Machico	Jan. 1–31	144	37	
Russia:				
Kief Government	Jan. 22–28	5	3	
Podolio	Jan. 22–28	4	3	
Turkey in Asia:				
Smyrna	Jan. 29–Feb. 12	10	10	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received During Week Ended March 17, 1911.

YELLOW FEVER.

Places.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Manaos	Feb. 5–11		8	
Para	Feb. 12–18	3	3	
Venezuela:				
Caracas	Feb. 1–15	7	4	

PLAGUE.

Brazil:				
Bahia	Dec. 17–23	1	1	
Sao Paulo	Jan. 8–21	1	2	
Formosa	Jan. 22–Feb. 4	7	6	
India:				
Bombay	Jan. 29–Feb. 4		53	
Calcutta	Jan. 15–21		10	
Kurrachee	Jan. 29–Feb. 4	41	40	
Mauritius	Dec. 2–29	160	90	
Trinidad	Mar. 15	1		

SMALLPOX.

Argentina:				
Buenos Aires	Dec. 1–31		7	
Rosario	Dec. 1–31		4	
Brazil:				
Bahia	Dec. 17–23	3	1	
Santos	Jan. 8–14	1	1	
Sao Paulo	Jan. 8–14		1	
Canada:				
Fernie	Feb. 28–Mar. 4	1		
Sydney	Feb. 28–Mar. 4	1		
Victoria	Feb. 22–28	1		
China:				
Hongkong	Jan. 22–28	5	4	
Shanghai	Jan. 28–Feb. 5	2	12	Deaths among natives.
Manchuria—				
Dalny	Feb. 5–11	1	1	
France:				
Paris	Feb. 12–18	3		
Great Britain:				
Liverpool	Feb. 12–18	1		
London	Feb. 19–25	35		
India:				
Bombay	Jan. 29–Feb. 4		4	
Calcutta	Jan. 15–21		1	
Madras	Jan. 22–Feb. 4	93	27	
Japan:				
Kobe	Feb. 6–12	1		
Italy:				
Palermo	Feb. 12–18	8	3	
Mexico:				
Aguascalientes	Feb. 19–25		7	
San Luis Potosi	Jan. 26–Feb. 11	9	11	
Tampico	Feb. 19–28	8	2	
Portugal:				
Lisbon	Feb. 12–18		17	
Russia:				
Moscow	Jan. 29–Feb. 11	23	7	
Odessa	Feb. 5–18	4	3	
Riga	Feb. 12–18	9		
St. Petersburg	Jan. 15–Feb. 4	81	24	
Straits Settlements:				
Singapore	Jan. 15–28	6	4	
Siberia:				
Vladivostok	Dec. 29–Jan. 21	8	3	
Switzerland:				
Cantons—				
Aargau	Jan. 29–Feb. 18	25		
Berne	Jan. 29–Feb. 11	4		
Turkey in Asia:				
Beirut	Feb. 5–18	7		
Uruguay:				
Montevideo	Dec. 1–31	6	4	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

[For reports received from June 25, 1910, to Dec. 30, 1910, see PUBLIC HEALTH REPORTS for Dec. 30, 1910. In accordance with custom, the tables of epidemic diseases are terminated semiannually and new tables begun.]

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Bajil	Jan. 18–27	49	38	
Hodeida	Jan. 23–Feb. 12	188	133	
Perim	Jan. 23			Present.
Maskat	Nov. 20–30	7	7	
Menakha	Jan. 19–27	89	20	
Obal	Jan. 27	1	1	
Zaida	Jan. 27	2	2	
Austria-Hungary	Aug. 3–Nov. 7			Two deaths not previously reported.
Croatia and Slavonia	Dec. 4–17	5	2	
Maren	Oct. 1–9	3		
Hungary				Total for Hungary, Nov. 27–Dec. 17: Cases, 9; deaths, 3.
Bulgaria:				
Tartar-Pazardjik	Jan. 10	2	2	
Varna	Nov. 29	2		From steamship Bulgarie, 3 fatal cases having been reported on p. 1936, Vol. XXV.
Ceylon:				
Colombo	Dec. 11–24	4	3	
China:				
Niuchwang	Aug. 1–Nov. 22			Occasional cases.
Shanghai	Aug. 1–31		1	Reported out of date.
Formosa	Nov. 20–Dec. 17	11	6	Mainly in Kelung and Taihoku.
Hawaii:				
Honolulu				Total from Feb. 25–Mar. 14: Cases, 31; deaths, 22.
India:				
Bombay	Nov. 23–Jan. 28		96	
Calcutta	Nov. 13–Feb. 14		250	
Madras	Nov. 27–Jan. 21		5	
Rangoon	Jan. 1–7		2	
Indo-China:				
Saigon	Dec. 12–Jan. 22	7	4	
Italy				Total for Italy, Dec. 27–Jan. 30; Cases, 111; deaths, 17.
Provinces—				
Aquila	Dec. 4–17	4	1	
Bari	Dec. 27–Jan. 30	5	2	
Caltanisetta	Dec. 4–10	1		
Caserta	Dec. 4–Jan. 14	15	3	
Catanzaro	Dec. 27–Jan. 6	2	2	
Lecce	Dec. 11–Jan. 30	111	13	
Palermo—				
Palermo	Dec. 4–10	16	6	
Insane asylum	Dec. 4–Jan. 6	24	6	
Rome	Dec. 4–Jan. 6	10	7	
Salerno	Dec. 11–Jan. 6	10		
Japan				Total for Japan, Sept. 14–Nov. 30: Cases, 2,770; deaths, 1,923; including cases and deaths appearing on p. 1937, Vol. XXV.
Aichi ken	Oct. 16–Nov. 30	3	3	
Ehime ken	Sept. 23–Nov. 30	27	19	
Fukuoka ken	Sept. 30–Nov. 30	234	165	
Hiogo ken, Kobe	Sept. 12–Nov. 30	607	396	
Hiroshima ken	Sept. 25–Nov. 30	58	30	
Kagawa ken	Oct. 2–Nov. 30	293	201	
Kagoshima ken	Oct. 28–Nov. 30	4	3	
Kochi ken	Oct. 18–Nov. 30	70	42	
Kyoto fu	Sept. 30–Nov. 30	143	119	
Kumamoto ken	Oct. 18–Nov. 30	19	11	
Miye ken	Oct. 11–Nov. 30	8	5	
Nagasaki ken	Oct. 16–Nov. 30	26	11	Dec. 12–25, 5 cases, 1 death.
Nara ken	Oct. 3–Nov. 30	31	23	
Oita ken	Oct. 10–Nov. 30	2	1	
Okayama ken	Sept. 29–Nov. 30	71	49	
Osaka fu	Sept. 17–Nov. 30	951	692	
Saga ken	Oct. 4–Nov. 30	51	31	
Shiga ken	Nov. 20–30	7	6	
Shimane ken	Oct. 24–Nov. 30	7	5	
Tokushima ken	Oct. 3–Nov. 30	59	37	
Tokyo fu	Oct. 18–Nov. 30	1	1	
Wakayama ken	Oct. 6–Nov. 30	57	44	
Yamaguchi ken	Oct. 12–Nov. 30	41	29	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

CHOLERA—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Java:				
Batavia	Nov. 13-Jan. 21	19	4	Among natives.
Samarang	Sept. 11-Nov. 30	581	498	
Soerobaya	Oct. 23-Dec. 24	23	15	
Korea:				
Seoul	Oct. 26-Nov. 5	1	1	
Madeira				Total for Madeira, Nov. 16-Jan. 12: Cases, 1,646; deaths, 525; including report, page 1938, Vol. XXV. Funchal district, Nov. 16-Jan. 31: Cases, 822; deaths, 238. Rural districts, Nov. 16-Dec. 31: Cases, 828; deaths, 267.
Funchal	Nov. 16-Dec. 8	126	36	
Calheta	Dec. 9-31	1		
Camara dos Lobos	Nov. 16-Dec. 8	112	32	
Ponto do Sol	Nov. 16-Dec. 8	54	20	
Santa Cruz	Nov. 16-Dec. 8	15	8	
Machico	Nov. 16-Dec. 8	31	5	
Porto Santo Island	Nov. 10-Dec. 8	7	3	
Persia:				
Assadabad	Oct. 5-Nov. 8		61	
Birjend	Nov. 10			Present.
Enzeli	Nov. 8-25	9	11	Present in vicinity and in Pire-Bazar.
Hamadan	Oct. 6-Dec. 3	42	22	
Kasri-Churine	Oct. 13-20		5	
Kerman	Nov. 22-Dec. 24	97	51	
Kermanchah	Nov. 5-10		6	
Mohammerah	Nov. 13-Dec. 5	11	3	
Resht	Nov. 19-Dec. 3	48	42	Present in all villages in vicinity.
Mollag-Ali	Nov. 20	6		
Turbat-i-Hidari	Oct. 10-Nov. 15	66	25	
Philippine Islands:				
Manila	Nov. 6-Dec. 31	9	6	Third quarter, 1910: Cases, 195; deaths, 141.
Provinces				Third quarter, 1910: Cases, 5,657; deaths, 4,089.
Albay	Dec. 24-Jan. 14	16	14	
Bulacan	Nov. 6-19	4	3	
Ilocos Sur	Nov. 6-Dec. 17	58	38	
Mindoro	Nov. 6-Dec. 10	24	17	
Rizal	Nov. 6-Dec. 3	4	1	
Union	Nov. 6-12	3	1	
Russia				Total for Russia, Nov. 20-Jan. 28: Cases, 1,229; deaths, 302. From May 8-Jan. 28: Cases, 216,795; deaths, 100,981.
Baku government—				
Baku	Nov. 6-Dec. 17	6	2	
Batum	Dec. 4-10	2	1	
Don territory	Nov. 6-19	6	2	
Erivan government	Nov. 6-Dec. 10	4	4	
Ferghana territory	Nov. 6-19	6	6	
Kharkov government	Nov. 6-12	2		
Kazan government	Nov. 6-Jan. 7	2	1	
Kherson government	Nov. 6-Dec. 3	4	4	
Kief government	Nov. 6-Jan. 28	44	17	
Kuban territory	Nov. 6-13	4	4	
Lublin government	Nov. 20-26	31	13	
Mohilev government	Nov. 6-19	2	1	
Orenburg government	Nov. 13-24	15	6	
Oufa government	Nov. 6-12	2	1	
Perm government	Nov. 20-26	1		
Podolia government	Nov. 13-Jan. 28	11	4	
Rjasan government	Nov. 6-12	2		
St. Petersburg government	Nov. 6-12	2		
St. Petersburg	Nov. 6-Dec. 31	32	16	
Samara government	Nov. 6-19	6		
Saratov government	Nov. 13-26	8	6	
Siberia, eastern	Nov. 6-19	12	3	Vladivostok, Oct. 29-Nov. 13: Cases, 4; deaths, 17.
Syr Darya territory	Nov. 6-19	7	4	
Taurida government—				
Sebastopol	Nov. 13-Dec. 3	7	4	
Tambov government	Nov. 13-Dec. 10	86	34	
Tiflis government	Nov. 6-26	2		

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

CHOLERA—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Russia—Continued.				
Vitebsk government	Nov. 6–19	3	2	
Veronesch government	Nov. 6–12	2		
Yekaterinislav government	Nov. 6–Jan. 14	65	34	
Siam:				
Bangkok	Nov. 6–Jan. 21	296	291	
Straits Settlements:				
Singapore	Dec. 25–31	1	1	
Sumatra:				
Bambel	Dec. 29			Present.
Biagmoeti	Nov. 14			Do.
Keretan	Dec. 29			Do.
Pengoeloedjahar	Nov. 14			Do.
Tripoli:				
Tripoli	Nov. 15–Dec. 8	37	37	
Turkey:				
Adrianople vilayet	Nov. 21–Dec. 15	60	70	94 cases and 34 deaths reported, p. 1940, Vol. XXV.
Constantinople	Nov. 22–Jan. 16	841	529	Total from Sept. 13–Jan. 16: Cases, 1,318; deaths, 793.
Saloniki vilayet	Dec. 11–31	50	25	
Turkey in Asia:				
Bagdad vilayet	Nov. 20–Dec. 11	119	115	Total, Oct. 16–Jan. 16: Cases, 819; deaths, 723.
Basra	Nov. 6–26	10	9	
Damascus	Feb. 3	13	3	Among pilgrims.
Mekka	Dec. 26–Jan. 28	153	142	
Samsoun	Nov. 20–Dec. 3	6	6	
Smyrna	Nov. 20–Feb. 12	331	209	
Trebizond	Nov. 20–Dec. 18	107	42	And vicinity.
Yembo	Jan. 7–12	24	21	
Zongouldak	Nov. 20–Dec. 16	9	6	

YELLOW FEVER.

Brazil:				
Manaos	Dec. 4–Feb. 4		70	
Para	Nov. 27–Feb. 11	173	73	
Ecuador:				
Guayaquil	Nov. 1–Jan. 31	73	31	
Honduras:				
Puerto Cortez	Jan. 21–29			One fatal case on U.S.S. Marietta.
Venezuela:				
Caracas	Dec. 4–Jan. 31	48	10	Nov. 22–Dec. 3, 5 deaths.
La Guaira	Dec. 1–15	1	1	Jan. 22–27, 1 fatal case in Canton, suburb.
Macuto	Dec. 1–7	1		
Maiquetia	Nov. 29	1		

PLAGUE.

Azores:				
Terceira	Dec. 24			Present.
Brazil:				
Bahia	Oct. 29–Dec. 16	31	27	
Pernambuco	July 1–Oct. 15		12	
Rio de Janeiro	Nov. 1–27	12	5	
Chile:				
Arica	Dec. 28–Jan. 12			Do.
Iquique	Jan. 1–28	5	3	
China:				
Amoy	Jan. 21	1		Kulangsu, Jan. 1–21, 3 fatal cases. Jan. 21, present in Amoy Island.
Changchung	Jan. 1–7			Present.
Paoting-fu	Jan. 24			Do.
Peking	Jan. 24	2		
Shantung Province	Jan. 15–Feb. 15		1,000	
Chefoo	Jan. 15–Feb. 15		300	
Tengchowfu	Feb. 4		30	
Sioke	Dec. 6–Jan. 4			Present; in the interior 60 miles from Amoy.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
China—Continued.				
Swatow	Jan. 28–Feb. 4	.....	.....	Present in vicinity.
Tientsin	Jan. 21	.....	4	Among Chinese.
Manchuria		.....	.....	Total for Manchuria, Oct. 25–Feb. 3: Cases, 1,176 Chinese, 40 Europeans; deaths, 1,164 Chinese, 37 Europeans.
Ashihe	Dec. 25–Jan. 13	2	.....	
Buhedu	Oct. 30	3	3	
Chang Chuen	Jan. 7–16	100	.....	
Dalny	Jan. 11–Feb. 8	66	60	
Dunzenshan	Dec. 25–Feb. 3	19	22	
Fuchiatien		.....	.....	Nov. 8–Jan. 28: Deaths, 3,402.
Hailar	Dec. 6	1	1	
Harbin		.....	.....	Nov. 8–Jan. 28: Deaths, 831 Chinese, 18 Europeans.
Hulan	Dec. 31	.....	.....	Present.
Iaomin	Dec. 25–Jan. 13	1	1	
Kirin	Jan. 7	.....	.....	Do.
Kuantchentzi	Jan. 1–Feb. 3	8	3	
Liesania vetka Handaohedzy.	Dec. 25–Jan. 13	9	9	
Lochagri	Dec. 27	4	4	
Loshagoon	Dec. 27	4	.....	
Manchuria, station	Dec. 7–26	85	95	
Moershan	Jan. 1–20	1	1	
Mukden	Jan. 2–16	89	63	Jan. 1–20; 189 deaths.
Sanshahe	Jan. 1–20	3	3	
Tieling	Jan. 14	.....	1	
Tchjalainarskly	Nov. 11–Dec. 3	104	106	Cases previously reported, 14; deaths, 12.
Tchjalantum	Nov. 21–Jan. 14	.....	42	
Turchiha	Oct. 30	4	4	
Tzaitzzaigoy	Jan. 1–20	2	2	
Ecuador:				
Babahoyo	Dec. 16–Jan. 15	16	4	
Duran	Dec. 16–Jan. 31	10	4	
Guayaquil	Nov. 1–Jan. 31	203	183	
Milagro	Jan. 1–31	7	5	
Egypt:				
Alexandria	Nov. 29–Jan. 15	6	2	
Provinces—				
Assiout	Dec. 1–Feb. 2	90	40	
Assouan	Jan. 1–Feb. 1	6	4	
Behera	Jan. 1–17	3	.....	
Galioubeeh	Nov. 22–Dec. 2	1	1	
Gizeh	Jan. 1–Feb. 2	9	5	
Kena	Jan. 14–Feb. 2	20	12	
Menouf	Dec. 2–Jan. 27	32	16	
Hawaii:				
Honokaa	Jan. 31	2	2	
India:				
Bombay	Nov. 23–Jan. 28	.....	140	
Calcutta	Nov. 13–Jan. 14	.....	94	
Kurrachee	Nov. 19–Jan. 28	103	101	
Madras	Dec. 11–17	.....	1	
Rangoon	Nov. 20–Jan. 14	.....	16	
Bombay Presidency and Sind.	Oct. 29–Jan. 28	21,855	14,671	
Madras Presidency	Oct. 29–Jan. 28	5,666	4,654	
Bengal	Oct. 29–Jan. 28	15,243	12,042	
United Provinces	Oct. 29–Jan. 28	66,534	56,216	
Punjab	Oct. 29–Jan. 28	19,395	15,294	
Burma	Oct. 29–Jan. 28	1,787	1,720	
Central Provinces	Oct. 29–Jan. 28	14,834	11,137	
Coorg	Oct. 29–Jan. 28	19	9	
Mysore State	Oct. 29–Jan. 28	7,302	5,255	
Hyderabad State	Oct. 29–Jan. 28	4,552	3,847	
Central India	Oct. 29–Jan. 28	3,332	2,703	
Rajputana and Ajmer-Merwara.	Oct. 29–Jan. 28	8,277	6,393	
Kashmir	Nov. 6–Jan. 28	104	74	
North West Province	Dec. 10–Jan. 28	61	52	
Grand total		168,961	134,067	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Indo-China:				
Saigon	Nov. 14-Jan. 22	3	3	
Mauritius	Sept. 30-Dec. 1	351	200	
New Caledonia:				
Noumea	Sept. 17			Present.
Peru:				
Arequipa Department	Nov. 1-30	4	2	
Moliendo				Dec. 17-Jan. 13, 9 cases, 3 deaths.
Callao Department	Nov. 1-Jan. 14	2		
Lambayeque Department	Nov. 1-30	2		
Libertad Department	Nov. 1-30	41	15	Dec. 10, still present in Chicama Valley, near Truxillo. Salaverry, Jan. 1-31, 5 cases, 2 deaths. Mar. 1, epidemic.
Lima Department	Nov. 1-Jan. 14	9	7	At Lima Dec. 11-Jan. 14, 10 cases, 2 deaths.
Piura Department	Nov. 1-30	13	7	
Russia:				
Odessa	Jan. 1	1		
Astrakhan Government—				
Abil-Isken	Nov. 22-29	4	4	
Kirghiz Steppe	Dec. 17-Jan. 29	82	57	
Kolden	Dec. 6-13	8	3	
Kolybai	Dec. 10-13	5	1	
Kulken Island	Oct. 13-Nov. 4	5	5	
Nauraali-Tchaygal	Nov. 23-29	5	5	
Neuren	Nov. 17-21	1	1	
Trans-Caucasia				Total from Oct. 23-Nov. 24: Cases, 28; deaths, 5.
Petrovosk	Nov. 23	1	1	
Sanitza-Olivianna	Nov. 22	1	1	
Baku	Dec. 17	1	1	
Batum	Dec. 17	1	1	
Odessa	Nov. 26-Dec. 9		1	
Siam:				
Bangkok	Nov. 27-Dec. 3	1	1	
Straits Settlements:				
Singapore	Nov. 13-Dec. 3	1	1	
Trinidad	Feb. 8		1	
Turkey in Asia:				
Jiddah	Jan 15	1		
Venezuela:				
Caracas	Nov. 9			Present.

SMALLPOX.

Abyssinia:				
Adis Abada	Nov. 20-Feb. 11			Present.
Arabia:				
Aden	Jan. 9-16	11	3	
Berbera	Dec. 9-Jan. 9			Epidemic.
Bulhar	Jan. 25			Present.
Maskat	Jan. 1-21	3		1 case from a British naval vessel.
Zeila	Jan. 25			Present.
Argentina:				
Buenos Aires	Oct. 1-Nov. 30		9	
Rosario	Oct. 1-Nov. 30		7	
Australia:				
Adelaide				Sept., 1910, 1 case on s. s. Kazembe from Singapore.
Barbados:				
Bridgetown	Jan. 14	1		From steamship Cara from Rio de Janeiro.
Brazil:				
Bahia	Oct. 29-Dec. 16	56	29	
Para	Nov. 27-Feb. 11	34	8	
Pernambuco	July 1-Nov. 30		699	
Rio de Janeiro	Nov. 14-27	3		
Canada:				
British Columbia—				
Fernie	Feb. 19-25	1		
Vancouver	Jan. 1-31	3		
Victoria	Dec. 11-Feb. 18	58		

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Canada—Continued.				
New Brunswick—				
Moncton	Jan. 29–Feb. 11	15		
Newcastle	Dec. 18–Jan. 25	9		Jan. 14–Feb. 25, in vicinity.
Nova Scotia—				
Halifax	Jan. 1–14	3		
Louisburg	Dec. 25–Feb. 4	9		
Sydney	Jan. 22–Feb. 11	2		
Ontario—				
Cornwall	Jan. 1–21	3		
Ottawa	Dec. 18–Feb. 25	7		
Quebec—				
Quebec	Feb. 12–18	1		
Ceylon:				
Colombo	Nov. 13–Jan. 7	25	6	Feb. 12, present.
Chile:				
Coquimbo Province	Dec. 13–30			Present in two localities.
Iquique	Nov. 13–19		1	
Punta Arenas	Nov. 1–30	1		
Talcahuano	Nov. 13–Dec. 17	23		
Valparaiso	Nov. 20–Jan. 28	448		Deaths not generally reported; Jan. 8–14, two deaths.
China:				
Canton	Dec. 11–17	26	3	
Chefoo	Dec. 11–17			Present among natives.
Chungking	Nov. 13–Jan. 28			Present.
Hongkong	Dec. 4–Jan. 21	9	5	
Nanking	Nov. 20–Feb. 11			Do.
Shanghai	Nov. 21–Jan. 29	28	125	Deaths among natives.
Swatow	Jan. 1–7			Present 25 miles inland; Jan. 21, present in vicinity.
Tsingtau	Jan. 8–28	11		
Colombia:				
Cartagena	Jan. 15			Present.
Egypt:				
Alexandria	Nov. 1–Dec. 31	1	2	
Cairo	Dec. 3–Feb. 4	8	4	
Port Said	Dec. 17–23	1		
France:				
Paris	Dec. 3–Feb. 11	35		
Germany				Total for Germany, Dec. 4–Jan. 7, cases 11.
Gibraltar	Jan. 16–Feb. 5	3		
Great Britain:				
Dublin	Jan. 15–21	1		
Leith	Dec. 11–17	2		From a steamship from Oporto.
Liverpool	Jan. 29–Feb. 4	1		
Hawaii:				
Honolulu	Jan. 3–Feb. 18	4		Jan. 3, 3 cases on s. s. Kiho Maru from Manzanillo. Feb. 18, 1 case on s. s. Chiyo Maru from Yokohama.
Maui—				
Puuene	Jan. 24	39		
Waikapu	Jan. 31	1		
India:				
Bombay	Dec. 6–Jan. 28		19	
Calcutta	Nov. 6–Jan. 7		13	
Madras	Nov. 20–Jan. 14	72	33	
Rangoon	Nov. 20–Jan. 14		14	
Indo-China:				
Saigon	Nov. 14–Jan. 22	44	13	
Italy:				
Naples	Dec. 4–Feb. 11	196	139	
Palermo	Jan. 8–Feb. 4	24	9	
Turin	Jan. 8–14	1		
Japan:				
Kobe	Dec. 26–Jan 1	2		From s. s. Shimosa from New York via ports.
Java:				
Batavia	Dec. 26–Jan. 21	5		
Malta:				
Valetta	Dec. 4–Jan. 28	4		
Manchuria:				
Dalny	Nov. 27–Dec. 3	1		

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from December 31, 1910, to March 10, 1911.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Mexico:				
Aguascalientes	Dec. 25–Feb. 18	.....	23	
Chihuahua	Jan. 30–Feb. 5	1	1	
Guadalajara	Jan. 29–Feb. 4	1	1	
Mexico	Dec. 11–Jan. 7	10	3	
Monterey	Dec. 19–25	.....	1	
San Luis Potosi	Nov. 13–Jan. 28	84	44	Jan. 26, present in the interior of the State.
Tampico	Dec. 2–Feb. 11	83	19	Present in Dona Cecilia, La Barra, and Tancol.
Netherlands:				
Rotterdam	Dec. 11–Jan. 28	4	.....	
New Zealand:				
Lyttelton	Dec. 30	1	.....	On s. s. Knight of the Garter from Karotzu, Japan.
Peru:				
Salaverry	Jan. 25–31	1	.....	Jan. 10–Feb. 7 present.
Truxillo	Dec. 19	.....	2	Dec. 19–Jan. 7 present in vicinity.
Philippine Islands	.....	.....	.....	Third quarter, 1910: Cases 11, deaths 0.
Portugal:				
Lisbon	Dec. 3–Feb. 11	179	.....	Oct. 30–Dec. 30, deaths 48. Year 1910, 286.
Russia:				
Libau	Dec. 5–Jan. 23	6	4	
Moscow	Nov. 13–Jan. 28	85	45	
Odessa	Nov. 20–Jan. 21	10	.....	
Riga	Dec. 11–Feb. 11	69	.....	Oct. 1–Nov. 30, 58 deaths.
St. Petersburg	Nov. 13–Jan. 14	235	65	
Warsaw	Oct. 9–Dec. 17	.....	19	
Siberia:				
Vladivostok	Nov. 22–Dec. 28	8	.....	
Siam:				
Bangkok	Dec. 21–Feb. 22	1	1	
Spain:				
Barcelona	Dec. 5–Jan. 8	.....	2	
Madrid	Nov. 1–Jan. 31	.....	15	
Seville	Jan. 1–31	.....	8	
Valencia	Nov. 27–Feb. 4	14	.....	
Straits Settlements:				
Penang	Nov. 6–Jan. 7	275	120	
Singapore	Nov. 13–Jan. 14	23	9	
Switzerland:				
Bern, Canton	Dec. 12–Jan. 14	7	.....	
Turkey:				
Constantinople	Dec. 19–25	.....	1	
Turkey in Asia				
Beirut	Dec. 4–Feb. 4	16	.....	
Smyrna	Dec. 18–24	1	.....	
Uruguay:				
Montevideo	Oct. 1–Nov. 30	25	6	
Zanzibar:				
Zanzibar	Oct. 31–Dec. 22	64	47	

MORTALITY.

WEEKLY MORTALITY TABLE, FOREIGN AND INSULAR CITIES.

Cities.	Week ended—	Estimated population.	Total deaths from all causes.	Deaths from—										
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Aberdeen	Feb. 11	185,703	44	....	....	....	....	....	....	....	....	1	1	....
Aguascallentes	Feb. 25	40,000	39	....	....	....	....	7	....	....	....	1	....	....
Amsterdam	Feb. 11	573,984	184	24	....	....	....	....	....	1	....	....	5	7
Antwerp	do	326,351	101	10	....	....	....	....	....	....	....	1	1	....
Athens	do	175,430	118	16	....	....	....	....	....	....	....	....	1	....
Do	Feb. 18	74,580	57	3	....	....	....	....	....	1	....	....	....	....
Do	Feb. 21	175,430	84	11	....	....	....	....	....	....	....	1	....	....
Bahia	Dec. 23	286,000	80	12	1	....	....	1	....	1	....	....	1	....
Do	Dec. 30	....	85	13	....	....	....	....	....	1	....	....	1	....
Barmen	Feb. 4	169,107	44	7	....	....	....	....	....	....	....	1	....	....
Batavia	Jan. 28	217,630	....	....	....	1	....	....	....	....	....	....	....	....
Beirut	Feb. 11	80,000	20	....	....	....	....	....	....	3	....	....	....	....
Do	Feb. 18	....	22	....	....	....	....	....	....	2	....	....	....	....
Belgrade	do	90,050	34	....	....	....	....	....	....	....	2	....	....	....
Berlin	Feb. 4	2,070,824	558	78	....	....	....	....	....	....	8	16	2	3
Birmingham	Feb. 18	575,545	216	....	....	....	....	....	....	....	1	2	26	5
Bombay	Feb. 4	977,822	814	49	53	8	....	4	....	2	....	....	47	....
Bradford	Feb. 18	297,780	88	10	....	....	....	....	....	....	....	2	....	8
Bristol	do	387,511	125	8	....	....	....	....	....	....	....	....	6	11
Brussels	do	562,895	246	15	....	....	....	....	....	1	....	1	....	....
Calcutta	Jan. 21	847,796	471	25	10	33	....	1	....	....	....	....	....	....
Do	Feb. 4	203,107	46	8	....	....	....	....	....	....	1	1	....	....
Cardiff	Feb. 18	....	56	9	....	....	....	....	....	....	....	2	....	....
Chemnitz	Feb. 11	288,755	99	10	....	....	....	....	....	....	....	3	....	....
Do	Feb. 18	289,850	117	16	....	....	....	....	....	....	....	4	....	2
Christiana	do	245,000	46	5	....	....	....	....	....	....	....	2	1	3
Coburg	do	23,781	9	1	....	....	....	....	....	....	1	....	....	....
Cologne	do	516,769	172	29	....	....	....	....	....	....	....	6	1	2
Copenhagen	Feb. 4	455,000	147	16	....	....	....	....	....	1	1	....	....	2
Constantinople	Feb. 19	1,000,000	394	36	....	....	....	....	....	3	2	....	....	....
Dalny	Feb. 4	40,955	20	....	10	....	....	....	....	1	....	....	....	....
Do	Feb. 11	....	20	....	....	....	....	1	....	....	....	....	....	....
Dresden	do	547,300	150	27	....	....	....	....	....	....	....	2	1	2
Dublin	do	402,928	220	33	....	....	....	....	....	2	4	2	2	3
Do	Feb. 18	....	208	30	....	....	....	....	....	2	6	3	2	6
Dundee	do	171,006	82	7	....	....	....	....	....	....	....	....	....	3
Edinburgh	do	365,253	96	14	....	....	....	....	....	....	....	1	2	1
Fiume	do	50,811	31	15	....	....	....	....	....	....	1	....	....	....
Frankfort-on-the-Main	Feb. 11	414,800	107	....	....	....	....	....	....	....	....	2	2	1
Do	Feb. 18	....	107	....	....	....	....	....	....	....	1	3	2	....
Georgetown	Feb. 4	315,000	55	2	....	....	....	....	....	1	....	....	....	....
Do	Feb. 11	....	58	2	....	....	....	....	....	1	....	1	....	....
Ghent	do	165,965	57	5	....	....	....	....	....	1	....	....	....	....
Glasgow	Feb. 24	897,178	357	....	....	....	....	....	1	1	....	4	1	26
Gothenberg	Feb. 18	165,400	35	6	....	....	....	....	....	....	....	1	....	....
Halifax	Feb. 4	50,000	21	2	....	....	....	....	....	....	....	1	....	....
Hamburg	Feb. 18	932,000	296	44	....	....	....	....	....	....	1	10	1	4
Havre	do	132,430	57	11	....	....	....	....	....	....	....	....	....	1
Hongkong	Jan. 28	336,488	....	....	....	....	....	4	....	2	....	....	....	....
Hull	Feb. 18	284,502	89	....	....	....	....	....	....	2	....	1	4	2
Kingston	do	48,504	2	....	....	....	....	....	....	2	....	....	....	....
Kobe	Feb. 5	400,147	161	....	....	....	....	....	....	....	....	1	....	....
Do	Feb. 12	....	170	....	....	....	....	....	....	1	....	2	....	....
Kurrachee	Feb. 4	130,000	117	....	40	....	....	....	....	....	....	....	....	....
Konigsberg	Feb. 11	245,853	93	12	....	....	....	....	....	....	....	1	....	....
Do	Feb. 18	....	90	8	....	....	....	....	....	....	....	....	2	....
Leeds	do	498,027	170	18	....	....	....	....	....	....	....	4	1	5
Leith	do	87,826	34	3	....	....	....	....	....	....	....	1	....	13
Leipzig	do	585,743	150	21	....	....	....	....	....	3	1	2	5	1
Libau	Feb. 19	90,000	....	....	....	....	....	....	....	....	1	....	....	....
Lyon	Feb. 18	500,000	251	40	....	....	....	....	....	....	....	1	....	....
Monterey	Feb. 26	100,000	49	2	....	....	....	....	....	1	1	....	....	....
Liege	Feb. 4	176,189	55	7	....	....	....	....	....	....	....	....	....	1
Liverpool	Feb. 18	774,951	325	30	....	....	....	....	....	2	5	6	12	5
London	do	7,645,716	2,390	....	....	....	....	....	....	3	5	21	148	56
Do	Feb. 25	....	2,246	....	....	....	....	....	....	5	6	14	185	45
Madras	Jan. 28	550,000	414	....	....	4	....	9	....	2	....	....	9	....
Do	Feb. 4	....	419	....	....	3	....	18	....	....	....	....	13	....
Manaos	Feb. 11	52,000	51	5	....	....	8	....	....	....	....	....	....	....
Manchester	Feb. 18	631,533	256	16	....	....	....	....	....	1	2	2	....	....
Mannheim	Feb. 11	194,000	57	11	....	....	....	....	....	....	....	1	1	1
Montreal	Mar. 4	450,000	178	17	....	....	....	....	....	1	2	5	2	2

MORTALITY—Continued.

Weekly mortality table, foreign and insular cities—Continued.

Cities.	Week ended—	Estimated population.	Total deaths from all causes.	Deaths from—										
				Tuberculosis.	Plague.	Cholera.	Yellow fever.	Smallpox.	Typhus fever.	Typhoid fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.
Moscow	Feb. 4	1,500,000	749	97	.....	.....	.....	3	33	1	17	28	10	2
Do	Feb. 11	.....	884	106	.....	.....	.....	4	35	4	32	31	12	4
Munich	do	597,000	199	22	.....	.....	.....	.....	.....	.....	.....	.....	3	1
Do	Feb. 18	.....	188	31	.....	.....	.....	.....	.....	.....	.....	1	3	2
Nagasaki	Feb. 12	178,074	51	5	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Nagoya	Jan. 29	402,101	147	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....
Newcastle-on-Tyne	Feb. 11	270,360	96	11	.....	.....	.....	.....	.....	.....	1	1	12	5
Nuevo Laredo	Mar. 4	9,000	10	2	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Odessa	Feb. 4	546,000	192	21	.....	.....	.....	.....	2	1	8	1	2	1
Do	Feb. 11	.....	226	38	.....	.....	.....	2	4	3	5	4	.....	1
Do	Feb. 18	.....	196	34	.....	.....	.....	1	3	2	4	5	2	.....
Palermo	do	340,000	218	8	.....	.....	.....	3	.....	2	3	.....	.....	.....
Para	do	185,000	89	7	.....	.....	3	.....	.....	.....	.....	.....	.....	.....
Paris	do	2,776,394	1,045	238	.....	.....	.....	.....	.....	6	1	1	12	6
Prague	Feb. 11	235,556	65	13	.....	.....	.....	.....	.....	.....	1	1	.....	.....
Do	Feb. 18	.....	110	17	.....	.....	.....	.....	.....	.....	.....	2	1	2
St. Petersburg	Jan. 21	1,678,000	790	116	.....	.....	.....	2	.....	9	25	18	15	7
Do	Jan. 28	.....	735	120	.....	.....	.....	11	1	5	17	11	17	.....
Do	Feb. 4	.....	737	140	.....	.....	.....	11	.....	7	18	10	10	4
San Luis Potosi	do	82,964	58	5	.....	.....	.....	7	1	.....	1	1	4	.....
Do	Feb. 11	.....	70	5	.....	.....	.....	4	.....	.....	.....	.....	3	.....
Tampico	Feb. 28	23,452	27	1	.....	.....	.....	2	.....	.....	.....	.....	2	.....
Veracruz	Feb. 11	47,000	30	8	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Yokohama	Feb. 13	407,432	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	.....

MORTALITY—FOREIGN AND INSULAR—COUNTRIES AND CITIES (untabulated).

ALGERIA—*Algiers.*—Month of January, 1911. Population, 150,000. Total number of deaths from all causes 418, including diphtheria 2, measles 1, tuberculosis 42, typhoid fever 7.

ARGENTINA—*Rosario.*—Month of December, 1910. Population, 198,781. Total number of deaths from all causes 429, including diphtheria 12, scarlet fever 1, smallpox 4, tuberculosis 42.

BRAZIL—*Ceara.*—Month of January, 1911. Population, 55,000. Total number of deaths from all causes 138, including tuberculosis 15, typhoid fever 7.

BRITISH BURMA—*Rangoon.*—Month of December, 1910. Population, 301,259. Total number of deaths from all causes 701, including plague 10, smallpox 5, tuberculosis 28.

CANADA—*Vancouver.*—Month of January, 1911. Population, 125,000. Total number of deaths from all causes 115, including diphtheria 3, scarlet fever 1, tuberculosis 14, typhoid fever 5.

DOMINICAN REPUBLIC—*Santo Domingo.*—Period from January 24 to February 20, 1911. Population, 18,326. Total number of deaths from all causes 33, including tuberculosis 3.

FORMOSA.—Four weeks ended February 4, 1911. Population, 3,290,186. Total number of deaths from all causes not reported. The deaths from contagious diseases include diphtheria 4, plague 7, typhoid fever 6.

GREAT BRITAIN.—Week ended February 18, 1911.

England and Wales.—The deaths registered in 77 great towns correspond to an annual rate of 17.2 per 1,000 of the population, which is estimated at 17,160,256.

Ireland.—The deaths registered in 21 principal town districts correspond to an annual rate of 22.7 per 1,000 of the population, which is estimated at 1,163,596. The lowest rate was recorded at Drogheda, viz, 4.1, and the highest at Clonmel, viz, 61.5 per 1,000.

Scotland.—The deaths registered in 8 principal towns correspond to an annual rate of 19 per 1,000 of the population, which is estimated at 1,917,875. The lowest rate was recorded at Aberdeen, viz, 13.2, and the highest at Dundee, viz, 25.3 per 1,000. The total number of deaths from all causes was 698, including diphtheria 7, measles 4, scarlet fever 1, typhoid fever 2.

ITALY—*Genoa.*—Two weeks ended February 15, 1911. Population, 279,163. Total number of deaths from all causes 301, including diphtheria 2, measles 2, tuberculosis 27.

Messina.—Period from February 1 to 20, 1911. Population 110,000. Total number of deaths from all causes 79, including diphtheria 1, tuberculosis 8, typhus fever 1.

MALTA.—Three weeks ended February 11, 1911. Population 215,879. Total number of deaths from all causes 278, including diphtheria 2, tuberculosis 9.

PORTO RICO.—Month of November, 1910. Population 1,118,012. Total number of deaths from all causes 2,240, including diphtheria 1, measles 4, tuberculosis 199, typhoid fever 34.

SOUTH AFRICA—*Johannesburg.*—Period from November 12, 1910, to January 7, 1911. Population 220,304. Total number of deaths from all causes 1,026, including measles 37, scarlet fever 3, tuberculosis 70, typhoid fever 24.

SPAIN—*Cadiz.*—Month of January, 1911. Population, 69,382. Total number of deaths from all causes, 203, including diphtheria 1, scarlet fever 1, tuberculosis 33, typhoid fever 1.

Madrid.—Month of January, 1911. Population, 613,436. Total number of deaths from all causes, 1,748, including diphtheria 18, measles 25, scarlet fever 1, smallpox 2, tuberculosis 183, typhus fever 7, typhoid fever 1.

Seville.—Month of January, 1911. Population, 154,315. Total number of deaths from all causes 540, including diphtheria 8, smallpox 8, tuberculosis 73, typhus fever 1.

TAHITI.—Four weeks ended February 17, 1911. Population, 4,000. Total number of deaths from all causes 5. No deaths from contagious diseases.

TURKEY—*Saloniki.*—Four weeks ended February 13, 1911. Population, 200,000. Total number of deaths from all causes, 183, including tuberculosis 27, typhoid fever 3.

By authority of the Secretary of the Treasury:

WALTER WYMAN,
Surgeon General,
United States Public Health and Marine-Hospital Service.